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COMPUTERWORLD

MAP/TOP to get better standards fit

BY ELISABETH HORWITT
CW STAFF

After remaining frozen for two years, MAP/TOP 3.0 is due to be thawed next spring and freshened up with some of the latest advances in standards-based networking, the North American MAP/TOP Users Group announced recently.

Among the more notable enhancements that will be incorporated into the 1991 MAP/TOP 3.0 supplement are Integrated Services Digital Network and 10Base-T support for Technical Office Protocol and the long-awaited fiber-based version of the 802.4 token-bus protocol. Manufacturing Automation Protocol and TOP are user-defined subsets of the Open Systems Interconnect standard, with MAP targeting the local factory networking environment and TOP addressing the office and business environment (see story page 47).

The supplement will help to align MAP and TOP protocols

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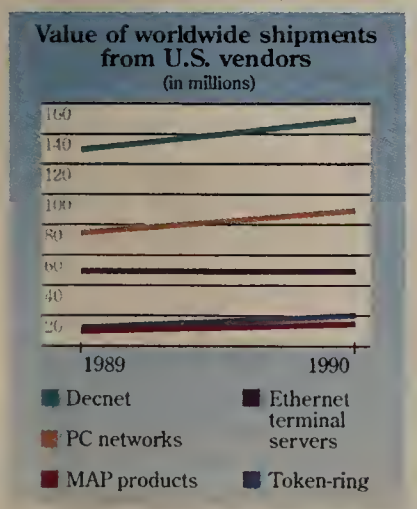
Catch-up time

Manufacturing Automation Protocol (MAP) has lagged behind other technologies on the factory floor



Source: Advanced Manufacturing Research
CW Chart: Paul Mock

Judge kills Dbase copyright

Decision clears way for clone makers to invade Ashton-Tate turf

BY JAMES DALY
CW STAFF

In a move that could signal the beginning of a radical opening up of the database software market, a federal judge has ruled that Ashton-Tate Corp.'s original copyright for its popular line of Dbase software applications is invalid.

The ruling by U.S. District Judge Terrence J. Hatter Jr. came at the culmination of a drawn-out copyright infringement suit that Ashton-Tate had brought against Fox Software, Inc. for allegedly duplicating the appearance of the Dbase III Plus package. The ruling could open the Dbase market to competitors and make a wider variety of low-cost options available to users. "A major drawback with Dbase is its high price," said Rocco Esposito, personal computer coordinator at Maidenform, Inc. in Bayonne, N.J., which uses Dbase-compatible software.

Neglected to disclose

In dismissing the 2-year-old case, Hatter ruled that when Ashton-Tate filed for its original Dbase copyright, it neglected to disclose that the program was a derivative of the Jet Propulsion Laboratories Document Information System, a public-domain application developed at the Jet Propulsion Laboratories in Pasadena, Calif.

"As a result of its inequitable conduct," Hatter declared the Dbase copyrights invalid.

While developers have hailed the move as an opportunity to open up the database market, Ashton-Tate President William Lyons said the company had no inkling the case would blow up in its face and would immediately ask Hatter to reconsider. "We're surprised and alarmed because we never got to the

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IN DEPTH: JOHNSON WAX

Playing 'Skill Connection' with IS

BY JOANIE M. WEXLER
CW STAFF

Lengyel *heads IS skills development*

The 400-member worldwide information systems staff at S. C. Johnson & Son, Inc. is holding its head high these days. It has re-engineered its *modus operandi* with a system that is now serving as a model for the entire firm.

Traditionally, the strategic role of IS has meant providing users in such business areas as sales, marketing and manufacturing with quick access to corporate resources that allow them to make better decisions faster. However, the firm, commonly known as Johnson Wax, has decided that IS employees *themselves* are strategic resources. It has developed a "skills inventory" database application to match individuals' expertise with the projects that suit them best.

Dubbed Proficere, the database system was built around Information Builders, Inc.'s Focus and was designed by Johnson's Information Services Group to provide quick, analytical access to the human resources it needs.

The project, spearheaded by Vice President and Chief Information Officer Laurance Burden and Director of IS Management Support Services Randy Lengyel, was based on more than a year's worth of interviews conducted with human resources and IS

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Failures pester portable PCs

BY RICHARD PASTORE
and MICHAEL FITZGERALD
CW STAFF

The first of Frank Nestor's Zenith Data Systems Supersport portable computers died on Oct. 23, 1989. The screen turned black on the Intel Corp. 8088-based unit. Since then, Nestor's 16 Supersports have failed a total of 31 times.

"Zenith would send me a replacement machine, and that would fail also," said Nestor, director of MIS at Summit Consulting, Inc. in Lakeland, Fla. He awaits an explanation from Zenith.

This is just one horror story from the world of portable computing, which frustrated users claim is rife with reliability problems, brand inconsistencies and exorbitant repair costs.

A high-ranking information systems official at a major federal agency using 1,500 Intel 80286-based Supersports said the machines have had several bad screens and defective hard drives. The agency said it was sending in so many units for repairs that its third-party maintenance firm complained it was losing money on the service contract.

NEC Technologies, Inc. almost lost a major customer because of chip failures and difficult setup procedures with its Prospeed 386-based portables.

The problems surfaced in "a

Continued on page 4

3Com to cut back software operations

Microsoft will take on LAN Manager control

BY PATRICIA KEEFE
CW STAFF

3Com Corp. will bail out of the network operating system business next month. According to internal documents obtained by *Computerworld,* 3Com intends to sell the rights to its LAN Manager-based 3+Open software and license a raft of LAN Manager research and development efforts to longtime partner Microsoft Corp.

Knowledgeable sources indicated that the announcement will take place early next month.

3Com President Eric Benhamou also told an assembly of managers last week that 3Com will stop investing money in four areas: directory services, personal computer-based internetworking, the Maxess Systems Network Architecture gateway family and various "nonessential aspects" of network management.

Managers were also told that if 3Com cannot find an investor or buyer by Jan. 15 for either Maxess or the Communications Solutions, Inc. division that

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INSIDE

Product Spotlight — There's a maze of client/server definitions to navigate before you buy actual products. Page 59.

The disgruntled staff member who allegedly wrote and sent the Scores virus on its way through an EDS computer and eventually into NASA systems could face charges in a few weeks. Page 4.

What lurks in the shadows? Perhaps a new source of cash for software vendors and some clarification of the policies governing the use of a single copy of a program. Page 7.

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12 IS staff members at **Amoco** are being reassigned — organizationally, not physically — to business units, where profit/loss responsibility lies.

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96 The former **Houston 30** joins the Corporation for Open Systems and fields hundreds of membership inquiries from across the U.S.

Quotable

"Frankly, it's embarrassing to be an expert on EDI and to forecast explosive growth year after year after year."

THOMAS P. COLBERG
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On users' cautious acceptance of EDI. See story page 48.

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The 5th Wave

"I SAID I WANTED A NEW MONITOR FOR CHRISTMAS! MONITOR! MONITOR!"

EXECUTIVE BRIEFING

■ **Johnson Wax has successfully re-engineered** several business functions with information technology — including the IS department itself. The $2.5 billion manufacturer uses a "skills inventory" database that matches IS employees to appropriate projects — and saves money. The firm is also revamping its financial applications and using an expert system to cope with worldwide environmental regulations. **Pages 1, 63.**

■ **Amoco's IS organization is the latest to push more responsibility** out to business units. Five hundred of Amoco's 1,900-employee IS staff will report to business unit executives instead of to IS managers. However, Amoco remains committed to several centralized IS functions, including consolidated data centers. **Page 12.**

■ **Laptop computers are rife with reliability weaknesses,** brand inconsistencies and high repair costs. Analysts attribute the portable problems to vendor compromises between weight, cost and durability. **Page 1.**

■ **An EPA study of radiation from VDTs** and other sources recommends a wave of new studies on the potential health risks. A draft of the study concluded that there is enough of an "elevated risk" of a link between cancer and electromagnetic fields to justify more studies. **Page 96.**

■ **A federal judge found Ashton-Tate's database copyright invalid** because the original copyright application failed to acknowledge existing technology from which the Dbase software was derived. The ruling, which caused the dismissal of Ashton-Tate's 2-year-old suit against Fox Software, could open up the personal computer database market and set a precedent for other pending copyright cases. **Page 1.**

■ **Data General founder Edson de Castro resigned** from the company, but the move was seen as more symbolic of the end of an era than as an action that would have a major effect on the company. De Castro had been much less involved in daily operations than President and Chief Executive Officer Ronald Skates. DG continues to bet its future on the Aviion line, which faces big hurdles in the brutally competitive workstation market. **Page 97.**

■ **The so-called Houston 30 users alliance** joined the Corporation for Open Systems. Officially known as the User Alliance for Open Systems, the group is one of a growing number within COS pushing to define user standards for vendors. **Page 96.**

■ **The high-tech holiday spirit** is in full swing at The Salvation Army in Chicago. A Microsoft Works database helps the Salvation Army schedule bell-ringing Santas and track donations at more than 650 "kettle sites" in the Chicago area. **Page 6.**

■ **What recession?** A leading IS executive search firm says that demand for top IS talent is as strong as ever — as are the salaries it commands. **Page 49.**

■ **The list of the IS field's "worst job seekers"** and their blunders includes short-term thinkers, money-mongers and poor interviewees. **Page 81.**

■ **Legal eye:** IS managers need to keep on top of copyright and patent laws in the early stages of software development. These laws are becoming more stringent than ever, and the stakes are high. **Page 87.**

■ **On-site this week:** Operation Desert Shield officials are generally pleased with the success of a massive PC network that tracks equipment and materials for the operation. **Page 48.** At Alaska Airlines, integration of in-house capabilities and outside services such as System One has helped keep the growing Seattle-based carrier profitable for 18 years. **Page 27.** One of the world's more unusual expert systems tracks mushroom-growing afflictions such as "bacterial blotch" at the Mushroom Experimental Station in The Netherlands. **Page 39.**

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Police set to nab virus author

Creator of the Scores virus is believed to be a former EDS employee

BY MICHAEL ALEXANDER
CW STAFF

DALLAS — The Dallas Police Department is preparing to file charges within weeks against the reputed author of Scores, a highly infectious and destructive virus that attacks Apple Computer, Inc. Macintoshes. It will be one of the few instances where a computer virus author has been identified and prosecuted for releasing his creation, according to computer virus experts.

The suspect, who authorities did not name, is thought to be a former employee of Electronic Data Systems Corp. (EDS), because the virus was originally designed to attack two proprietary applications used exclusively by EDS. The infected programs caused computer systems to crash repeatedly.

The virus was written in late 1987 and released in February 1988, according to a number of virus experts. It was quickly discovered and eradicated by EDS engineers within two weeks, according to Roger Still, a spokesman for EDS. The virus infected 20 to 25 machines but did little real damage, he added.

It is uncertain how, but the virus showed up on federal government computers in Washington, D.C., Maryland and Florida in April 1988. In Washington, the virus infected 200 Macintoshes at the National Aeronautics and Space Administration, as well as dozens of computers belonging to several other federal agencies and congressional offices. Computers at Apple's government sales office in Washington were also infected.

NASA officials asked Dallas police to gather evidence and file charges, Sgt. Gary White of the Dallas Police Department said. "They felt that because it started in Dallas, it therefore makes it our jurisdiction."

NASA conducted its own investigation into the incident and turned over the information to Dallas authorities, according to Frank Kasmer, a special agent in NASA's Office of Inspector General. Kasmer said that other "government agencies, private citizens and companies would like them to look into it locally, because the federal prosecutors decided that it would be a local problem." He declined to comment further on the case.

Among the willing

EDS is not among those companies that are asking Dallas law enforcers to prosecute the case, Still said. However, the company is willing to cooperate in the investigation, he added.

Charges will probably be filed in mid-January or the first part of February, White said. "We're going back through the evidence, plus whatever else we can come up with, to see if it will fit local laws." The charges will be filed under the state's Harmful Computer Access statute.

Dallas police officials said they believe they have enough evidence to prosecute but added last week that they were gathering testimony from people and organizations who claim to have been hit by the virus in an attempt to catalog how widespread the virus has become and attach an estimate of damages.

"Once we go to court, we'll be trying to show that even though it started here, it went worldwide and that thousands of individuals and companies were affected," White said. The investigators will also attempt to affix a dollar loss to the damage because that would determine what a suitable penalty will be.

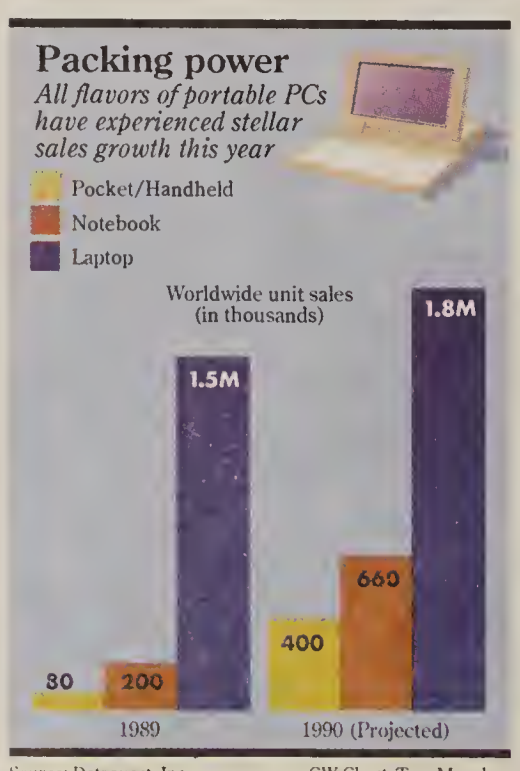
Dallas authorities said they expect the suspect to plead guilty when shown the evidence against him. They will probably seek a suspended sentence with community service and a public apology, White said.

"It will depend on the prosecutor who prosecutes the case, but 50 years in jail isn't going to accomplish anything," White said. "We would rather see the community get something back."

Portable PCs

FROM PAGE 1

significant number of machines," said Dick Nelson, vice president of systems at New York Life Insurance Co. In October, Nelson stopped placing orders for Prospeeds, which had been New York Life's standard portable computer for its agency business. After one month of talks and reassessment, the firm decided to resume its relationship with NEC.



Source: Dataquest, Inc. CW Chart: Tom Monahan

According to some users, portables break more frequently than their cousins on the desktop. At Jockey International, Inc. in Kenosha, Wis., about 10% of the firm's installed desktop personal computers are being repaired at a given time. But 35% to 40% of its portables require fixing, estimated Jacqueline Byndorp, Jockey's PC coordinator.

Even more disturbing is that unlike most desktop PCs, the portables often break down during their first year of service, Byndorp added.

Analysts attributed these problems to vendor compromises on weight, cost and durability. As the portable PC shrinks in size and grows in power, these design trade-offs will become even more agonizing.

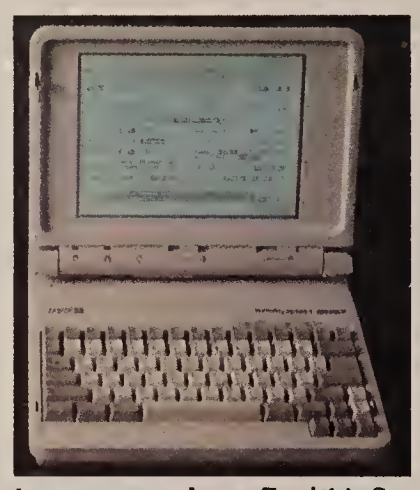
"Anytime you try to make things lighter, [something else] suffers," said John Dunkle, vice president at Workgroup Technologies, Inc. in Hampton, N.H.

The new 386SX-based notebook PCs "are probably not as durable as they ought to be, judging from what I saw" at Comdex/Fall '90, said Will Fastie, editor of the "Fastie Report" in Baltimore.

Users of 20-pound arm busters cannot rest easy either, however sturdier the bigger portables may seem.

While some laptop PCs have held up well, "we found the Mac Portable to be a much more fragile piece of technology," said John Moriarty, president of Lapstop Corp., a portable-PC rental firm in Salem, Mass.

"Our records say [laptops] do fail more often than the desktops — probably at a 25% to 30% higher failure rate," said Thomas Ewing, vice president and assistant general manager at TRW Customer Service Division, a nationwide service organization in Fairfield, N.J.


Laptops such as *Zenith's Supersport shape up as being less reliable than desktop systems*

Ewing said laptop problems were widely varied, and laptops take almost twice as long to repair as desktops.

Their proprietary construction makes parts for laptops two to three times more expensive than comparable desktop PC components.

For instance, fixing a distracting line down the center of a portable's gas plasma display can cost customers between $1,000 and $1,500.

"It's really ridiculous, and customers take it out on us," said Richard Allegretto, general manager of Data National Corp., a PC repair house in Boston.

At Caisse Nationale de Credit Agricole, all 12 of its LTEs developed cracks. Worse, new cases obtained from Compaq Computer Corp. at no charge "produced exactly the same cracks, so there was no real point in continuing to replace the cases," said Paul Nelis, senior microcomputer specialist at the bank's North American operation.

Vendors have been reluctant to comment on these problems because few statistics are kept on portable repair rates.

A Compaq spokesman said only "a small percentage" of customers reported cracks, but added that the cases "were not consistent with the kind of quality we think we should be providing." The company has switched to new materials and provided owners of older LTEs with a lifetime warranty.

A Zenith Data Systems spokesman claimed "an insignificant number" of Supersport 286 machines suffered video failures because of motherboard instabilities. The flaws were reportedly fixed as of Jan. 1, 1990, and Zenith doubled the one-year warranty on models made before that date.

When prodded, PC repairmen and analysts will cite particular brands that seem hardier (and more pricey) than others — Toshiba America, Inc. and Compaq among them. But they caution that there is no best portable.

"They've all failed. They've all been in here. Nobody's exempt," said Dan Mazurek, service manager at Advanced Computer Repair Centers in Woburn, Mass.

Despite these complaints, there are many users who extol the rugged virtues of their units. The U.S. government recently purchased a number of off-the-shelf Zenith portables for use in Operation Desert Shield because of their durability.

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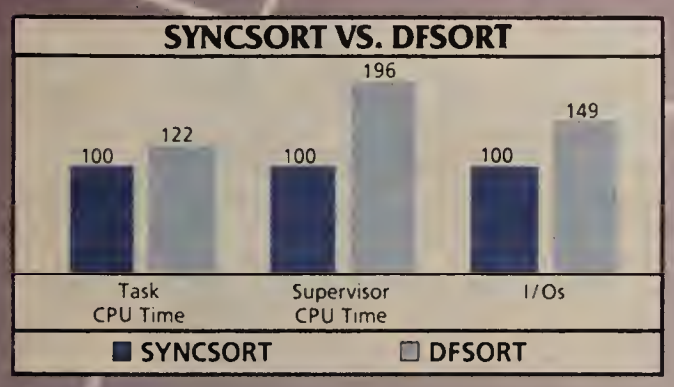

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AT&T/NCR make their stands

BY MICHAEL FITZGERALD
CW STAFF

AT&T and NCR Corp. appeared to be settling into siege positions as AT&T's bid to take over the Dayton, Ohio-based computer manufacturer moved into its second week.

AT&T's hostile takeover bid, which started on Dec. 6 after the NCR board rejected a friendly merger, remains in place, and NCR executives continue to do what they can to keep the company independent. Late in the week, NCR's board rejected the $90 per share hostile tender offer, calling it "grossly inadequate."

"Clearly, AT&T is attempting, for its own purposes, to take advantage of NCR's artificially and temporarily depressed stock price," NCR Chairman Charles E. Exley Jr. said in a written statement.

Meanwhile, AT&T said it still hopes to negotiate a settlement and announced that it had lined up a consortium of banks to fund its $6.12 billion, all-cash takeover move. NCR filed suit in an Ohio court, asking for a judgment stating that NCR's shareholder rights plan is lawful.

Analysts are betting that if the deal goes through, it will be for more than $90 per share.

"Anything can happen in this deal," said Byron Walker, credit analyst at Moody's Investor's Service. Walker said only one thing is certain: "[Exley] will maximize returns to stakeholders. He believes in that and has the wherewithal to do it."

Most analysts said NCR is not worth Exley's asking price of $125 per share, and some said they think it was fairly valued at $55. The market price last week held at just above $90 per share. The New York Stock Exchange briefly suspended trading Wednesday on NCR's stock because of a news report about negotiations between NCR and potential "white knights."

In the meantime, doubts swirled about the merits of the deal.

A quick deal benefits all

If AT&T's effort to take over NCR is lengthy, it will hurt both companies, no matter what the resolution, analysts said.

"Their competitors will lap at their chops to see it not go through in a hurry, and people will legitimately have concerns, because NCR will be late with products," said Bob Vautrain, an analyst at Gartner Group/Infocorp in Santa Clara, Calif. "Both companies' competitors will pick up on this and use it as a FUD [fear, uncertainty and doubt] factor against them."

However, if the merger is smooth and resolved quickly, NCR should not be thrown off its System 3000 stride, said David Card, midrange analyst at International Data Corp. in Framingham, Mass.

Then the deal should strengthen the position of the combined companies against Hewlett-Packard Co., IBM and Digital Equipment Corp. and fend off any ventures that Sun Microsystems, Inc. may make into commercial Unix.

Most analysts said they believe that AT&T will let NCR stay autonomous. "I kind of see this acquisition by AT&T as an attempt . . . to get out of the computer business," said David Schofield, an analyst at Duff & Phelps, Inc. in Chicago. With the acquisition, AT&T could immediately rid itself of its troubled computer division, while at the same time maintaining a presence in the computer market.

The way the financing shakes out could also affect the venture. Exley's asking price of $125 per share would be paid with AT&T stock, while AT&T's current bid is an all cash one and will expire on Jan. 4.

Stock or cash makes a difference, said Barry Bosak, who follows NCR at Smith Barney, Harris, Upham & Co. in New York. A stock swap is more attractive to investors because of the capital gains tax incurred by a cash sale.

AT&T customers not fazed by NCR threats

BY ELLIS BOOKER
CW STAFF

NCR Corp. Chairman Charles E. Exley Jr.'s vow to "ax" a number of AT&T computer products, should AT&T succeed with the hostile takeover attempt it launched two weeks ago, was not being taken seriously by AT&T customers last week.

Exley's threat painted a scenario in which the head of a company that loses a takeover battle could not only keep his job but also purge the victor's product lines.

AT&T would let NCR "pick and choose" what it wanted to retain from AT&T Computer Systems' product portfolio, Exley said. In a letter to Exley on Dec. 5, AT&T Chairman Robert E. Allen said he would want NCR senior management to run the merged operation.

Vengeance is mine

If given such oversight, Exley has said he would quickly "orphan" the AT&T 3B2 minicomputer line, select the Open Systems Foundation's Motif over Open Look — AT&T's choice for graphical interfaces — and "ax" AT&T's Unix client approach and Tuxedo transaction monitoring system in favor of NCR's technology.

"They're both reputable companies, and I'd really be shocked if either walked away from their customers," said Frank Erbrick, senior vice president at United Parcel Service, Inc. (UPS) in Greenwich, Conn.

UPS is a major customer of AT&T and NCR. Eighteen months ago, it signed a $20 million purchase contract with AT&T Computer Systems for personal computers. UPS also buys NCR terminals, scales and NCR Tower computers.

Several AT&T customers said they see the logic behind AT&T's interest in NCR, which also backs an open systems architecture and Unix. Some went so far as to advocate a merger.

"It signals [that AT&T] wants to be a big-time player in telecomputing, to be the preeminent provider of these services," said Steve Muzzo, chief executive officer at Wallmark, Inc. in West Lake Village, Calif. Wallmark last week announced it was engaged in a five-year, $30 million deal with AT&T for a health information network linking insurance providers, employers and medical facilities.

Muzzo expressed little concern that his AT&T field service representatives — who have been on-site since October — may be reporting through Dayton soon. "It doesn't concern me . . . unless NCR changes the aggressive way AT&T has approached the market," he said.

However, Amtrak's senior director of data center operations, David Hadrick, said he was uncomfortable with the level of service from AT&T and NCR. "The service and support on data processing equipment from both is not up to par with IBM," Hadrick said. "If it got any worse as the result of a merger, I'd be worried."

This year, Amtrak signed a $14 million contract with AT&T to replace its terminals with AT&T brand, IBM-compatible PCs and controllers. Amtrak also buys self-service ticketing machines from NCR.

Database helps keep bells ringing

BY CAROL HILDEBRAND
CW STAFF

Collecting coins in a kettle is a pretty old-fashioned method of fund-raising, and the Salvation Army is a pretty old-fashioned outfit. But the army's Greater Chicago area divisional headquarters is using the power of high tech to pull it out of the Norman Rockwell age when it comes to keeping track of its bell-ringers.

According to Don Eley, director of special efforts at the Chicago office, the logistics of coordinating the Christmas kettle event gave him the idea for putting the data on-line.

The Chicago area has about 650 kettle sites under the jurisdiction of 30 community "core" centers. Using Microsoft Works from Microsoft Corp., Eley created a database that tracks pertinent information for individual sites.

The database has really been a help in scheduling the volunteers who man sites, Eley said. For example, sites are not manned continually. "If they're at a train station, they'd be manned in the morning and the evening but not throughout the whole day." He said he can use the database to staff each site most effectively. "That way, we don't end up with too many people ringing bells at each location."

Troubleshooting in this hectic season is also eased. If there is a problem at a site, Eley said, he can check the database to find out which officer is responsible for that location. "I can then just call him and get immediate assistance out there," he said.

The amount of money that is taken in at each location is also tracked. By combining information about the location and the number of hours the site was worked, Eley said, he can compute the hourly intake of each site, which helps him plan for the future.

Joe Guerriro

The Salvation Army *is using a database to coordinate information from its collection sites*

SDI information database available for commercial use

WASHINGTON, D.C. — The U.S. Department of Defense has established a database of information on technologies developed for the Strategic Defense Initiative (SDI) that has potential for commercial use. The database contains 1,400 unclassified, nonproprietary summaries of SDI spin-offs.

The database is available to any U.S. citizen or company that has signed an agreement with the Defense Logistics Agency.

According to the Pentagon's Strategic Defense Initiative Office (SDIO), commercial computer spin-offs from SDI have included optical supercomputers, computer-aided design and software engineering tools and new computer security measures. For example, the SDIO said Odyssey Research Associates in Ithaca, N.Y., is extending work done for SDI to develop ways to permit computer security for networked computers to be controlled from any site.

The database contains pointers to other technology transfer databases and business assistance programs provided by more than 600 federal, state and local agencies.

GARY ANTHES

Lotus seeks industry dialog on shadow copies

BY PATRICIA KEEFE
CW STAFF

Should applications be licensed on a per user or per machine basis? Rocketing sales of laptop and home computers are pushing this question to the fore, especially given speculation that software developers are looking to the growing ranks of portable users to pump up flagging sales.

Thus, Lotus Development Corp., which is taking heat over its per-machine policy, is taking steps to spearhead an industry powwow that could provide a consensus on how to deal with so-called "shadow copies."

Although the effort is in the very early stages, analysts questioned last week whether this might constitute an antitrust violation.

"Shadow copies are a gigantic problem," said Lotus Chairman Jim Manzi, who added he has spoken informally in recent weeks with officials from both Microsoft Corp. and the Software Publishers Association (SPA) about working within the SPA, and possibly with customers, to "intelligently" resolve this issue and others.

For example, some users have questioned why they are allowed to license one copy of software, install it on one machine and have 10 people use it, yet one user cannot install one package on two machines for personal use.

Even the most vigilant personal computer managers can be overwhelmed by an installed base of hundreds and thousands of users running a mix of packages all sporting different use restrictions. "It's a record-keeping nightmare," one Midwest federal user asserted.

"It's a real can of worms," said Jeff Tarter, publisher of the "Soft Letter" newsletter. He maintained that the issue is not one of payment for corporate managers but rather a desire to provide users with a set of consistent rules. This is not possible today.

Cumbersome procedures

As do many developers, Lotus requires users to purchase a separate copy of software for each machine. If a user wants to install Lotus' 1-2-3 on a second computer, it must initially be removed from the first computer — a cumbersome procedure that many users object to.

"It ticks off the user and doesn't create a lot of good will," said Nancy McSharry, an analyst at International Data Corp.'s Menlo Park, Calif., office.

In recent months, *Lotus* magazine has published several letters from readers complaining about the developer's policy. One user said he had decided against purchasing Lotus, while another was looking "real hard" at alternative software.

One such alternative comes from Borland International, Inc., which has effectively wielded its liberal licensing policy as a marketing tool. Borland's "no-nonsense" license compares software to a book. Users can make as many copies as they want, as long as the copies are for their personal use. This approach draws applause from users and analysts alike. "From a standpoint of customer relations, other vendors would do well to adopt Borland's approach," said Will Fastie, publisher of "The Fastie Report."

A software license buys a user the ability to access the software, a PC manager at a major West Coast bank said. He added that it should not matter how the user uses the package, as long as there is no simultaneous use.

Microsoft falls in between. It allows copies under tightly defined circumstances, but these rules go out the window if the user can state that he uses one computer 80% of the time. Then the user is permitted to install copies on a second computer. But some users condemn this approach as wishy-washy and too subject to interpretation.

As for the SPA, Director Ken Wasch offered yet another twist. The SPA promotes awareness of software as protected intellectual property. It is leery of anything that encourages users to copy software. Wasch said he leans toward charging users a minimal amount, perhaps $50, for what he calls a laptop or home computer "extension."

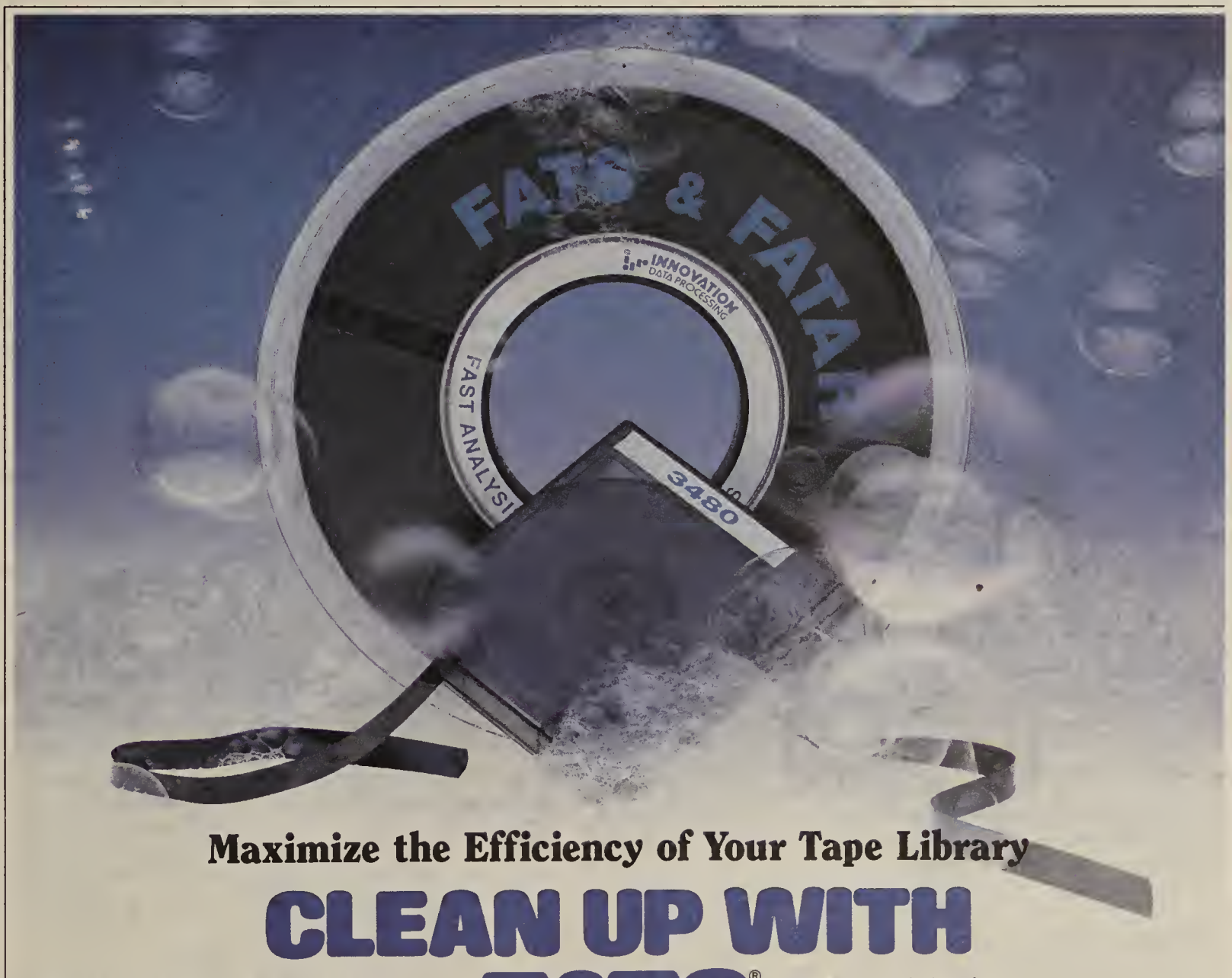
Not a good idea

Users and analysts generally turned a cold shoulder to the idea. "The idea is ridiculous; users won't do it anyway," Fastie said.

However, David Cearley, a Gartner Group, Inc. analyst, suggested that unless a portable is really a secondary machine, software companies may be justified in requiring purchase of a second copy.

It is preferable to spending several hundred dollars, and it would work on an individual basis, said Dick Nelson, a vice president at New York Life Insurance Co. in New York. But he also said it would prove a bureaucratic nightmare for corporations. "I have 8,000 agents with laptops. I can't possibly administer that!"

Yet another option is the unlimited use site license. Nelson would prefer that route — but based on the number of users, not machines. A systems manager at a Fortune 1,000 retail concern said he has successfully negotiated site licenses. "Vendors are willing to negotiate, as long as [users] play straight. You have to guarantee no concurrent use and then police yourself internally," he said.



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NEWS SHORTS

Bachman, Index move to OS/2

Bachman Information Systems, Inc. announced OS/2 versions of two re-engineering tools: Capture for IMS and Capture for PL/1. In September, the company announced an OS/2 version for Bachman Analyst, the process and logic modeling environment used by its re-engineering tools. At the same time, Index Technology Corp. said that the OS/2 version of its Excelerator design product will go out to early support sites some time this week.

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Dbase IV for DEC's VMS shipping

Ashton-Tate Corp. continued to target multiuser, multitasking platforms as it began shipping an edition of its Dbase IV Version 1.1 database application for Digital Equipment Corp.'s VMS operating environment. The product, which is being marketed and supported in the U.S. by DEC, will allow Dbase IV users to run the DOS-based application on a DEC VAX VMS system without modifying or recompiling code. DEC is offering introductory pricing of $995 for single-user workstations and $4,200 for a four-user license until March 31, 1991. In separate news, the company promoted President William Lyons to chief executive officer.

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New firm to target OOP

A group of software industry veterans, many recently departed from minicomputer maker Data General Corp., have banded together to form a new venture, dubbed Hyperdesk Corp. The new entry is being financed by Tokyo-based ASCII Corp., a Japanese systems and applications software vendor of the personal computer, workstation and server market. Hyperdesk will offer object-oriented software products in distributed local-area network environments. The software technology was purchased from DG, and under terms of the agreement, the DG Aviion workstation will be one of the first development platforms for the new software.

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Apollo to crew: Find other jobs

Trying to shrink its work force at the Apollo Systems Division of Hewlett-Packard Co., which is located in Chelmsford, Mass., HP told 120 hardware and software engineers to look for other jobs within the company. Some jobs will be available at the Chelmsford site, but most are expected to be at other locations. With that directive, HP has asked a total of more than 1,120 employees to look for another job this year, according to a spokeswoman. Of those, approximately 800 have secured other work within the company.

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The Leningrad stock exchange

The City of Leningrad signed a letter of intent with Englewood, N.J.-based Peake/Ryerson Consulting Group and New York-based Transvik, Inc. last week to create a highly automated stock and commodities exchange. Scheduled for completion in about one year, the system will be styled after the Nordex Scandinavian commodities exchange in London, which Transvik built, and centered on DEC Vaxclusters, "assuming it is permissible and possible," Transvik Chairman Bjorn Wissen said. No details were given on how much the system will cost or how Leningrad will pay for it.

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Stratus strikes Seven-Eleven deal

Stratus Computer, Inc. last week announced a $3.9 million deal with the Seven-Eleven Japan Co. in Tokyo, which will buy nine Stratus XA2000 systems to run its new store inventory management and merchandising system. Using what Stratus claims is the world's largest Integrated Services Digital Network, Seven-Eleven, the largest convenience store chain and food retailer in Japan, will be collecting sales transactions from its 4,200 stores on the Stratus systems by June 1991. The entire project, including new hardware, software, networking equipment and terminals, is estimated at $17 million during the next two years.

More news shorts on page 95

Users to demand net software

BY JOANIE M. WEXLER
CW STAFF

The deficit of applications optimized for Banyan Systems, Inc. Virtual Networking Software (Vines) and other networks could turn around if the efforts of a fledgling group of high-clout user companies are successful.

About 25 large user companies — unofficially calling themselves the Enterprise Network Applications Consortium — met early this month to consider approaching software developers en masse to demand commercial availability of the networking applications they need.

The group included some of Banyan's largest users: Compaq Computer Corp.; Pacific Gas & Electric Co.; Pennsylvania Blue Shield; Nike, Inc.; U.S. Sprint Communications Co.; MCI Communications Corp.; and the Canadian National Defense.

Considerable size

Members of the consortium said the group accounts for about 70,000 workstations and 2,500 servers running on Banyan networks. It plans to work with Banyan in driving the development of commercially available applications that integrate with the Vines network operating system at all network levels. A Banyan spokesman said the vendor is behind the group's efforts all the way.

Art Beckman, manager of information technology services at Pacific Gas & Electric, currently spearheads the group. He pointed out that the theme of the consortium is to "get more applications for the networking world — period." He noted that "there is a special flavor for Banyan, because we're all large Banyan users." However, he said, because of a lack of networking standards in general, the issue reaches to anyone involved in enterprisewide networking.

Beckman explained that the efficiency of applications tested to work on local-area networks does not necessarily translate into the enterprise network. "Often developers take a standalone application and turn it into a network application tested on a LAN with only a few nodes," he said. "But with a scenario of 200 to 300 servers talking to each other at various speeds — real-life networking — a lot of applications aren't efficient throughout the entire organization."

"The application developers want input from us; we represent an opportunity for them," said Michael S. Kinsey, who represents Pennsylvania Blue Shield on its steering committee. "There are applications available that work in conjunction with Vines but are not Vines-integrated. I can't take a file right out of word processing and dump it directly into electronic mail. I want integration across all layers; I want to enter my password once — not three times — for all the functions I do."

Cover up with third parties

Kinsey said that currently, his firm — which is installing Banyan as its enterprise networking scheme — is using third-party applications "to mask that inelegance to users."

Kinsey also noted that Pennsylvania Blue Shield would prefer not to do in-house development. "Every time Vines gets upgraded, we'd have to recode our applications — an application maintenance nightmare."

The consortium is slated to meet again in February to focus its charter, which is currently under construction by the steering committee.

3Com

FROM PAGE 1

supplies it, it will begin to "wind down" the SNA division.

Meanwhile, a marketing and engineering team has been directed to establish "an affordable network management solution."

During at least one internal meeting and throughout the documents, 3Com stressed that it will not abandon affected users. It has "forged an agreement [with Microsoft] that will protect 3Com's customers' and resellers' investment in LAN Manager while this transition occurs."

Managers were told that Microsoft will modify LAN Manager to facilitate migration of 3+ and 3+Open 1.X customers.

Although steps are being taken to ensure continued support and product migration, 3Com does risk losing customers who had been attracted to its one-stop shopping. "The network had 3Com's name on every piece; management figured it had to work together," said Matt Scholz, IS manager at the San Diego County Water Authority.

One user said he no longer knows what 3Com's business is. It is "disheartening," said Bob Saur, IS manager at Index Technology Corp., to see 3Com "bailing out" of networking. Handing off sole responsibility for LAN Manager development to Microsoft is expected to hasten the development of a core LAN Manager product. "Where we find ourselves [today] is with a great [network operating system] platform, which threatens to diverge, and customers who are confused as to where they should go to get LAN Manager solutions," 3Com officials said in the documentation.

The decision to halt further investments into LAN Manager allows 3Com to "turn [its] networking expertise more aggressively toward producing server, management and connectivity platforms and solutions . . . from a network operating system neutral stance," according to the documentation.

In short, the company intends to continue the shift in strategy it began earlier this year by moving away from work groups and client/server technology toward providing the pieces required to connect and manage open, global data networks.

Last week, 3Com founder Robert Metcalfe said LAN Manager sales never constituted more than 10% of 3Com's revenue. In fact, during the manager's meeting last week, Benhamou repeatedly cited poor return on LAN Manager investments, a source said.

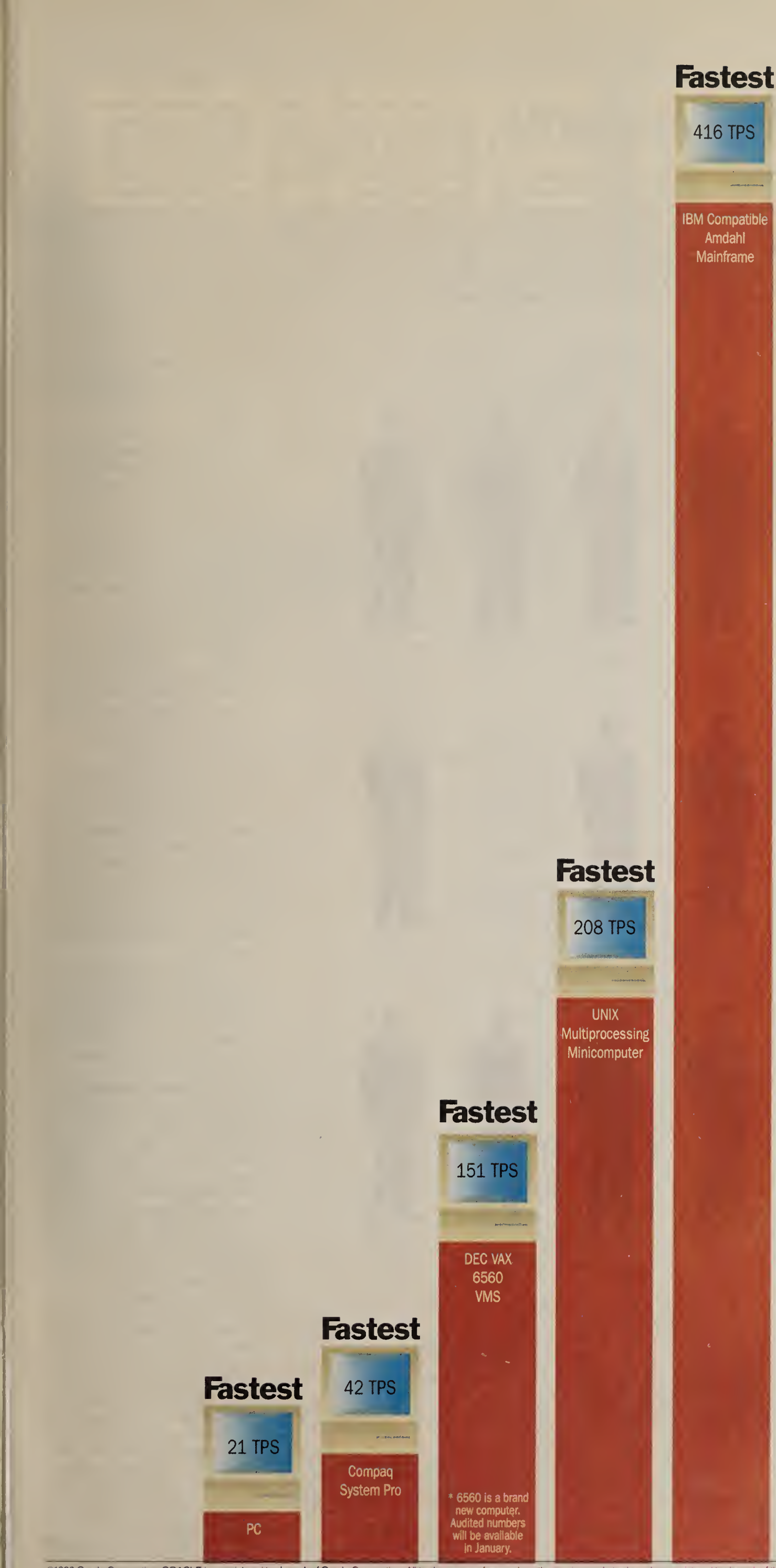
Former 3Com Executive Vice President Les Denend said the writing was on the wall last August when first-quarter figures showed that Distributed Systems Division sales were sinking. Benhamou "made it clear at the time that 3Com would be less involved with LAN Manager development," Denend said.

> IT IS "DISHEARTENING" to see 3Com "bailing out" of networking.
>
> BOB SAUR
> INDEX TECHNOLOGY

The deal will also relieve 3Com of its obligations under a contract with Microsoft that requires it to pay Microsoft license fees, regardless of how many copies of LAN Manager it sells, a source said.

The two vendors co-developed LAN Manager, but the upcoming announcement will deed the source code to Microsoft. In return, Microsoft will license the rights to three 3Com LAN Manager development efforts: X.500 services, Apple Computer, Inc. Macintosh connectivity and Novell, Inc. Netware connectivity.

West Coast correspondent Jim Nash contributed to this story.



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Apple users voice Mac concerns

BY JOHANNA AMBROSIO
CW STAFF

ORLANDO, Fla. — Corporate Macintosh users met last week to challenge Apple Computer, Inc. on issues ranging from service and support to how the Macintosh fits into an enterprisewide computer network.

While users said they continue to be satisfied with the Macintosh as a personal productivity tool, conversation centered on networking, integration and whether Apple is doing enough to help the Macintosh connect to mainframes and other environments. Some users voiced concern over whether they are doing the right thing by continuing their Macintosh investments.

"Users are saying that we're using the Macintosh strategically, and we want some recognition by Apple of that fact," said Millie Koss, an associate director at Harvard University in Cambridge, Mass. "It's more than just a PC now."

The forum for Koss and other large Macintosh users to voice their concerns was the fourth Managing Apple Computers in Information Systems (MACIS) conference. An independent group formed in February 1989, MACIS is comprised of 120 member organizations, with a total of 200,000 Macintoshes installed. Each member has at least 100 Macintoshes.

"The big bugaboo in my organization right now is how the Macintosh will work with AD/Cycle," said an IS staff member from a large Midwestern insurance firm, referring to IBM's architecture for computer-aided software engineering.

"Our executives are really concerned that OS/2 will have some kind of strategic advantage in the AD/Cycle environment," he said.

Even users who have thousands of Macintoshes installed as their primary workstation platforms are having some doubts. "I'm sneaking in a few PS/2s with Windows," said one director at a large services firm. "Even though our official platform is the Macintosh, I don't want to wake up one day and find that we've missed out."

For their part, Apple executives at the meeting tried to allay users' concerns. They said they are addressing the networking issues and will continue to do so, both with Apple-developed products and by entering into relationships with third parties.

Customer service concerns

Service and support were also on users' minds. Despite the Apple representatives' assurances that the company is formalizing its internal support mechanisms and making more services available for its dealers to provide to customers, some users expressed skepticism that the new strategy will work.

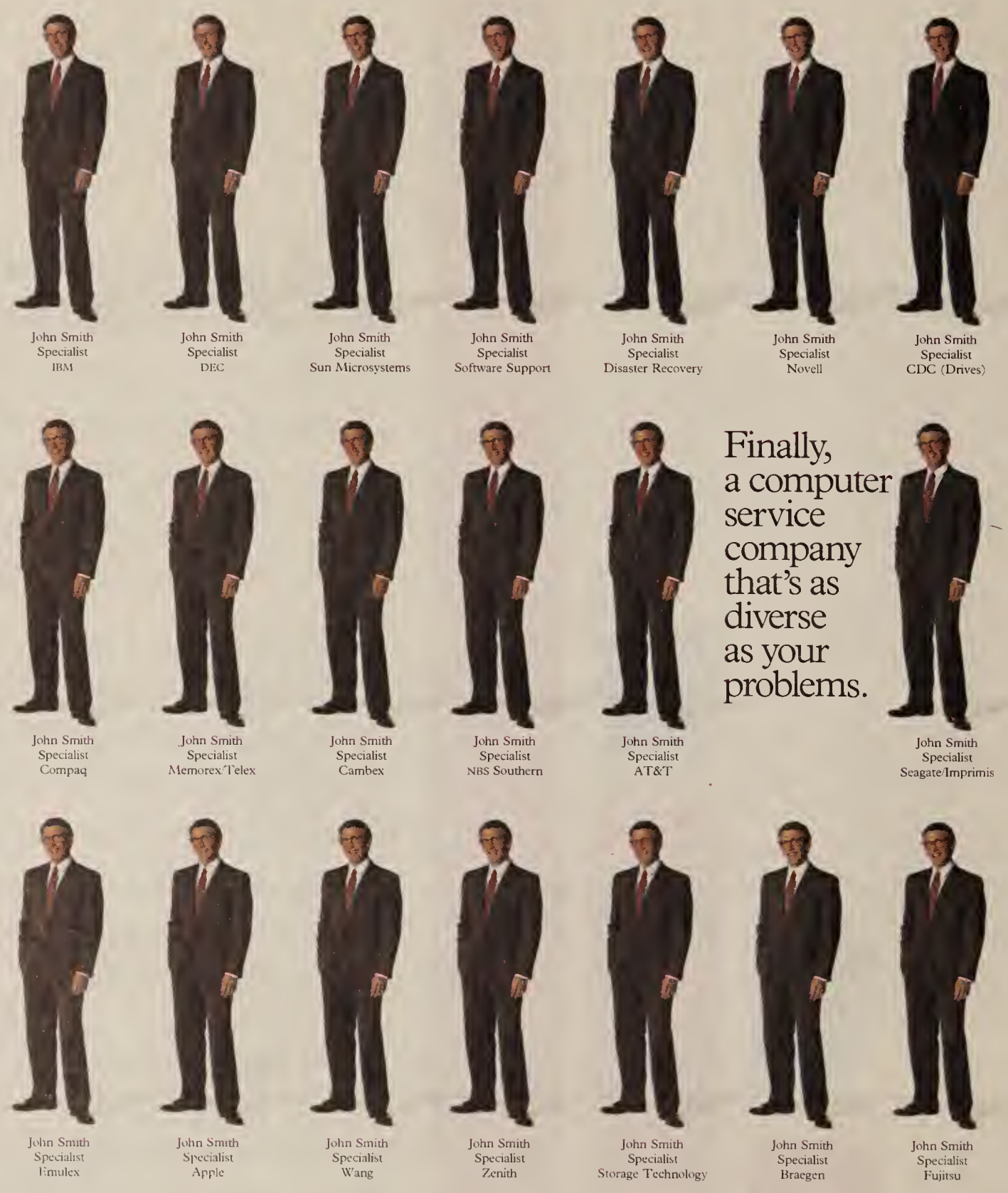
"I'm very doubtful that the dealer channel will ever come up to the level we need," said Karen L. White, supervisor of advanced technology at the California State Automobile Association in San Francisco.

Still, Morris Taradalsky, Apple's vice president of customer support, pledged that "by 1993, Apple will be the very best provider of service. We are developing an institutional support framework to make sure everyone gets the support they need."

He said Apple will make a tool called Network Design Simulator available to dealers in 1991 to help them design and analyze network performance.

Other support mechanisms include a toll-free number, a three-tier warranty reimbursement, an improved parts distribution system and more education for the Apple representatives assigned to large accounts.

What most users' problems boil down to is "that these people are taking a risk — a personal risk — by installing Macintoshes," said Keith R. Fox, vice president of Apple's Business Markets Group. "They want assurances that we will stand behind them, and we will."



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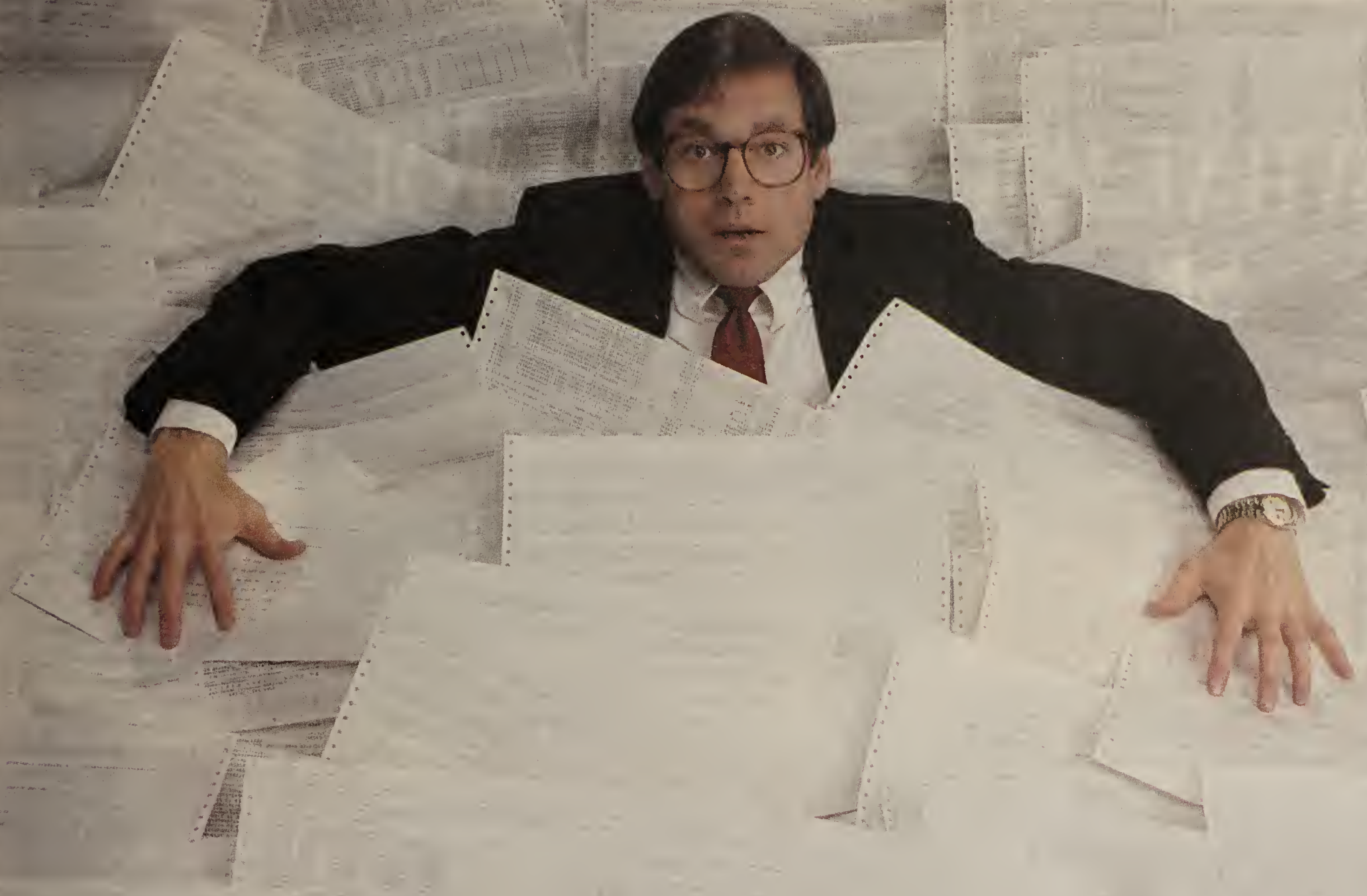

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Amoco brings IS closer to end users

Gives operating units more responsibility for application development

BY JOHANNA AMBROSIO
CW STAFF

CHICAGO — Amoco Corp. is reassigning about one-fourth of its corporate information systems work force to end-user divisions as part of a broader effort to move profit-and-loss responsibility out to business units.

The move, announced on Dec. 7 to Amoco employees, will be completed by March, said John Reid, general manager of IS. Some 500 of a total of 1,900 staff members in the corporate IS group will now report directly to management in the operating companies, including Amoco Oil Co., Amoco Chemical Co. and Amoco Production Co.

"There will be no geographical movement, just movement on the organizational chart," Reid said. "Where they had solid-line reporting responsibility to the IS unit and dotted-line responsibility to the operating companies, it will be the other way around."

Amoco is doing this, Reid said, "to put the applications development people in closer alignment with end users." He said the move fits in with Amoco's corporate philosophy of giving the operating units the tools they need to take profit-and-loss responsibility for themselves.

Most of the reassigned IS employees are applications development staff members, including project leaders, programmers and analysts. Reid said they will be doing many of the same things they have done in the past, and only the reporting structure will change. In fact, recruitment, training and career management for the 500 people "will be something we in IS will continue to handle," Reid said.

Another Amoco IS executive characterized the move as "more of a reaffirmation of IS' responsibilities." Richard Fenlon, manager at the Amoco computing center in Tulsa, Okla., said, "I wouldn't call it earth-shattering. For me, it's business as usual; there's been no major change in our philosophy."

> "THERE WILL be no geographical movement, just movement on the organizational chart."
>
> JOHN REID
> AMOCO

Reid stated emphatically that this move does not represent any intent to dismantle corporate IS. "There are very good and just reasons to keep a centralized IS unit. These include determining longer term strategy, introducing technology into the corporation in the right way and realizing economies of scale when purchasing hardware and software," he said.

The reassigned people represent about half of the corporate IS group's systems development staff. "The other half will stay here to work on those things that impact the corporation as a whole," such as human resources, Reid said.

During the past two years, Amoco has taken steps to centralize its IS function by consolidating five data centers into two, he said. "They very much remain under the control of IS."

He added that the move was not caused by the worsening economy. "The economy won't change anything here at Amoco," he said. "We've already had good practice at coping with unfavorable economic conditions."

If anything, Reid said, the economy "will cause IS to undergo the same scrutiny all other cost structures will get. We're not focused on one element of costs. We're focused on the business units, and IS expenditures are their decision — just like whether to put in a new pipeline or drill a new well."

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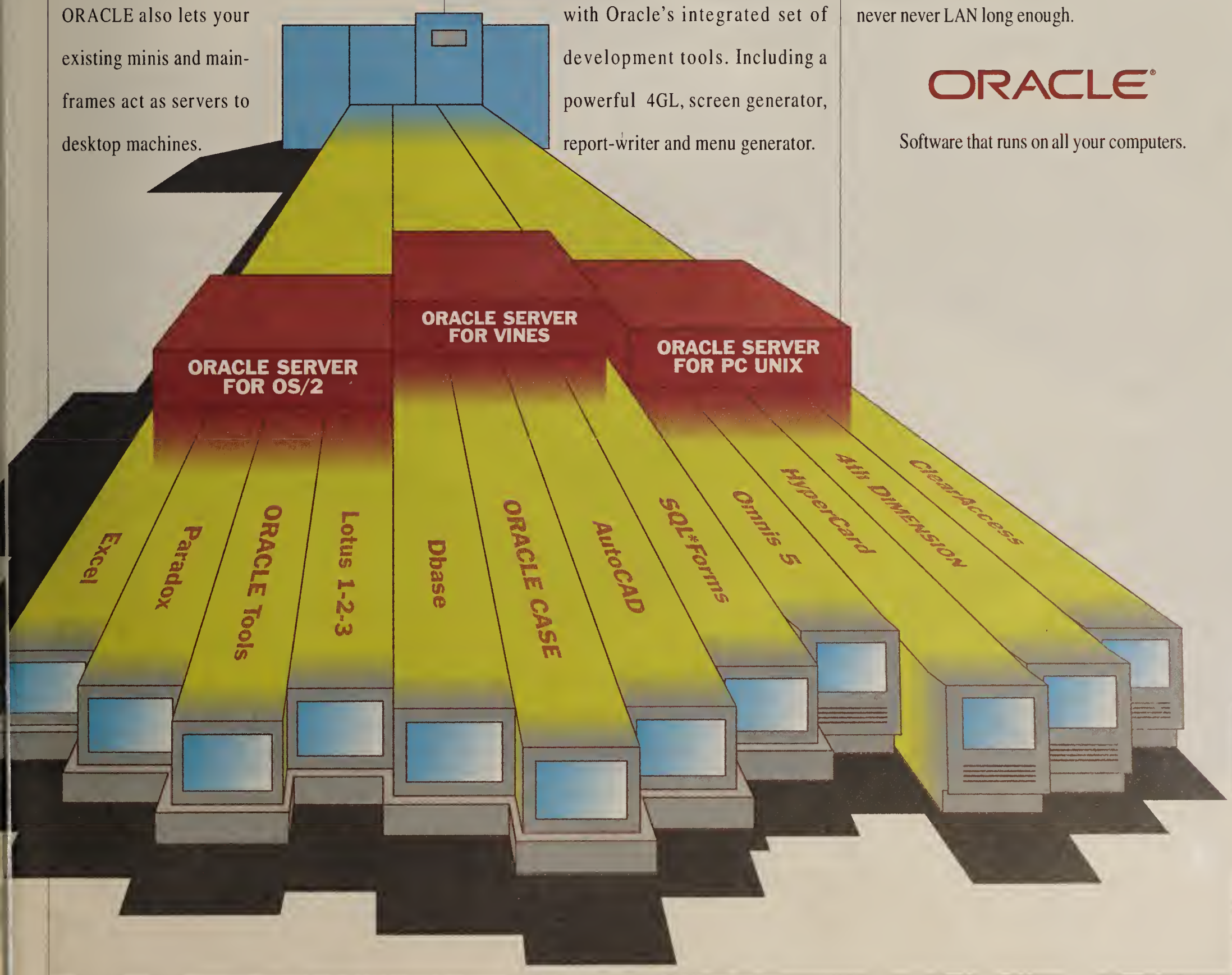

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HEWLETT PACKARD

Interop bans Fibronics

BY JOANIE M. WEXLER
CW STAFF

Unsportsmanlike behavior has reportedly gotten Fiber Distributed Data Interface (FDDI) pioneer Fibronics International, Inc. banned from participating in next year's Interop show.

Reports that the company has been circulating a list of approximately 30 FDDI vendors whose equipment may have performed under par during October's preshow hot-staging were confirmed last week by Interop, Inc. President Dan Lynch. Participating vendors must sign a nondisclosure agreement stating that interoperability performance is confidential, and according to Lynch, Fibronics violated that agreement.

Almost 40 vendors participated in an FDDI demonstration at Interop '90. It was the first public demonstration of heterogeneous FDDI equipment exchanging data over the 100M bit/sec. fiber-based ring-topology local-area network. Fibronics network management equipment monitored the network.

"We have forbidden Fibronics from being in the show next year," Lynch stated. He said he saw a copy of the list, which was sent to him by an angry Fibronics competitor that participated in the FDDI demonstration.

Inaccurate attack

"Only some of the critique was accurate," Lynch said. He added that the Fibronics official took "snapshots in time." For example, a device that was not up on the ring at a given moment "might have been working fine three hours later," he explained.

Fibronics' Director of Marketing Hal Spurney said the document had been intended for "internal use only. What has happened is that someone has picked up and circulated a confidential document. It is not Fibronics' policy to use these tactics."

MAP/TOP

CONTINUED FROM PAGE 1

"with the 1988, as opposed to the 1984 versions" of International Standards Organization's OSI specifications, said Randy Olson, a MAP/TOP steering committee member and a systems associate at Eastman Chemical Co. The supplement will also broaden the range of protocols and functions supported by the standards.

For example, a fiber-based version of 802.4 will appeal to a number of sites that can make use of fiber-optic cable's ability to carry signals over longer distances and lesser vulnerability to electronic interference as compared with MAP's traditional broadband medium, Olson said.

Token-bus products could well use a boost in market appeal. A recent study by Advanced Manufacturing Research, Inc. (AMR) in Cambridge, Mass., showed that sales for such products have been flat.

One protocol that stands to gain from the supplement is the Manufacturing Message Service (MMS), which has become the closest thing to a plant-floor networking standard, AMR President Anthony Friscia said.

The supplement will provide an application programming interface for MMS, making it much easier for users to write their own applications to run on top of the messaging service, Olson said.

Perhaps even more significant is the planned addition of MMS to the TOP protocol suite that targets business and office applications, Friscia said.

TOP support of MMS will enable users to port the messaging service across 802.4, 802.3 and 802.5 protocols, Friscia pointed out. This is desirable for firms that do not want to be tied to one local-area network standard. One such firm is Eastman Chemical's parent, Eastman Kodak Co., which has already ported MMS to 802.3 — the TOP protocol — at some sites, Olson said.

Weyerhaeuser Co. has already identifed MMS as a promising basis for its factory data collection system but is likely to implement the protocol more quickly if the enhancements promised in the supplement "work as advertised," said Randy Cunningham, manager of Weyerhaeuser's manufacturing integration unit. The Tacoma, Wash.-based firm is setting up a laboratory to test a range of networking standards as part of a computer-integrated manufacturing strategy.

Don't tie me down

A big concern for Weyerhaeuser is not to be tied down to any particular LAN protocol, Cunningham said. "Getting involved in 802.4 vs. token-ring or baseband vs. broadband is gibberish; what we're interested in is getting information from the plant floor all the way up to the CEO."

Other features of the supplement, due for publication in the first quarter of next year, include the following:

- TOP support of ISDN as an interconnectivity protocol for LANs.
- TOP support of the 10Base-T standard, which defines 10M bit/sec. Ethernet over twisted-pair.
- Record-level file access via File Transfer, Access and Management.
- Connectionless LAN-to-LAN connectivity service for both MAP and TOP.
- Inclusion of Fiber Distributed Data Interface in the TOP appendix.
- MAP support of the International Graphics Exchange Standard.

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UDS, acknowledged by leading trade magazines and independent research organizations as the world's premier supplier of V.32 modems, offers more variations on the V.32 theme than any other manufacturer.

Every modem in the UDS V.32 family has the dial-up, full-duplex 9600 bps and associated fallback capabilities mandated by the CCITT recommendation. Beyond basic V.32 conformity lies a myriad of features and options. Among the user options available are:

PACKAGING — UDS V.32s may be ordered as board-level IBM plug-ins, in standalone packages or as central site rack-mountable cards.

THROUGHPUT — Selected models offer MNP® levels 4 and 5 for error control and data compression; others, in compliance with CCITT V.42 *bis*, offer MNP or LAP-M compression throughput rates up to 38,400 bps.

CONNECTIVITY — Sync-Up™ board-level versions of V.32s are available for various combinations of BSC, SNA and OS/2 host-to-remote communication for EDI, X.25, BSC, SNA and LU6.2 applications.

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digital update

NEWS AND VIEWS DECEMBER 1990

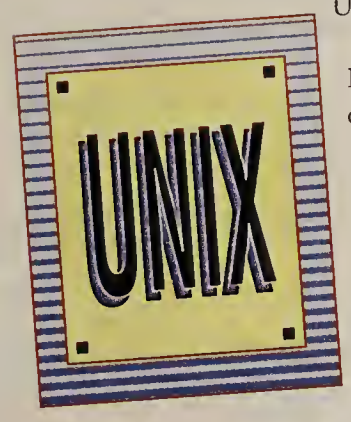
Digital & UNIX Computing

SERIOUS BUSINESS

by
Dom LaCava
Vice President
UNIX-based
Software and Systems
Group

The decisions you face about computing with the UNIX operating system may be the most important computing decisions you'll make during the coming decade. Many computer vendors claim to be "serious about UNIX." It's the fashionable thing to say these days. But the degree to which a vendor is "serious" about UNIX—and the ways in which it demonstrates its commitment—can determine if that vendor will succeed during the 1990s.

Digital *is* very serious about UNIX computing. And we're proving it every day with products. We've dedicated enormous resources to build the best hardware and software for UNIX computing.

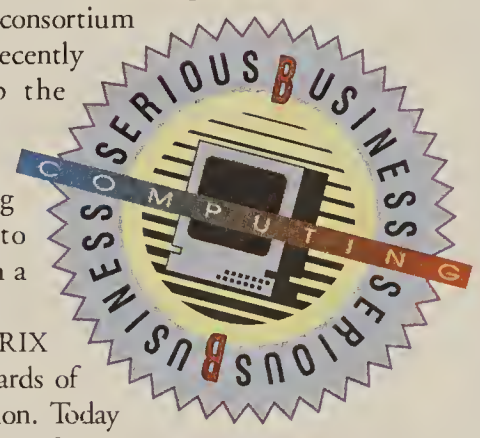


In just 23 months we've announced 15 RISC-based systems that run ULTRIX, our enhanced version of the UNIX operating system. Our RISC family has grown to include six workstations and eight server/timesharing systems. In October we introduced the DECsystem 5100 and 5500 systems. These are server/timesharing and general purpose systems that fit into the low end and mid range of our RISC server family. They offer outstanding price/performance and expandability. Coupled with our new ULTRIX services for PC software, these systems make ideal servers for PC workgroups. Recently, we've also announced a family of Intel-based systems and servers designed specifically for small businesses. These systems run the SCO operating system.

ULTRIX: Standards-Compliant, Open UNIX Computing

Digital's approach to UNIX software is dictated by your business needs. Our corporate UNIX product is ULTRIX, based on the Berkeley 4.2 release, with 4.3 and System V enhancements. We're always developing and enhancing ULTRIX. It is one of the most standards-compliant UNIX products available today, and we're continually expanding it to incorporate new standards and new capabilities.

ULTRIX is leading the way in standards compliance through Digital's support of POSIX, X/Open, and the Open Software Foundation (OSF). Digital has been a strong supporter of OSF since the consortium was founded in 1988. We recently announced plans to ship the OSF/1 developer's kit in the first quarter of calendar 1991, making Digital the first vendor to announce a ship date for such a product.



Digital is making ULTRIX compliant with all the standards of the Open Software Foundation. Today ULTRIX conforms to OSF's Motif standard for the user interface. It will incorporate the OSF standards for the Distributed Computing Environment (DCE) and OSF's Distributed Management Environment (DME) technology. These activities show our strong support for industry standards in UNIX computing.

The Door to Open Computing

Many of you are interested in UNIX as a way to achieve "open computing"—a vendor-neutral computing environment based on portable applications and standard hardware. This kind of computing goes beyond UNIX to include multiple operating systems, applications, and hardware platforms from a variety of vendors.

Each of the three major U.S. computer vendors offers at least three families of hardware, and at least three operating systems. But there's a key difference among these vendors: only Digital merges these different families where it counts—at the application level. Through our Network Application Support (NAS) products, we can integrate VAX/VMS systems, UNIX systems, DOS systems, OS/2 systems, and Apple Macintosh systems. Computers that run the UNIX operating system are full participants in this larger, integrated computing environment. They can share data, applications, and networked resources with systems from other vendors that run different operating systems.

continued ➤

A Line on Our History

Digital & UNIX

Digital and UNIX software have a long and distinguished association. As we've done for the past twenty years, we will continue to enhance, market, and support UNIX-based technology.

1966
Bell Labs develops UNIX on a Digital PDP-7 computer.

1970
UNIX is ported to the PDP-11 computer and the C language, also developed at Bell Labs. AT&T begins to distribute the UNIX operating system to nonprofit organizations.

1978
UC at Berkeley ports UNIX V7 to a VAX system, provides virtual memory support, and begins to distribute as Berkeley Software Distribution (BSD 3.2).

1980s
After divestiture, AT&T begins to market its version, called UNIX System V.

1983
ULTRIX adapts UNIX operating system for VAX computers and VAXstation workstations.

1986
Digital announces:
VAXstation II/GPX, the first technical UNIX workstation.

1988
Network Applications Support (NAS) integrates MS-DOS, OS/2, and UNIX systems into DECnet/OSI open network.

1989
DECwindows enables access to VMS, UNIX, and MS-DOS applications from anywhere on the network.
Digital announces RISC-based products:
DECstation 2100
DECstation 3100
DECsystem 3100
DECsystem 5400.

1990
April—Digital announces RISC-based products:
DECstation/System 5000
ULTRIX V4.0.

October—Digital announces:
DECsystem 5100
DECsystem 5500
applicationDEC 433MP.

➤ Serious Business continued

That's true "open computing," and it's the most important part of what Digital offers to UNIX users. We offer a highly productive family of systems that run UNIX, and a highly standards-compliant UNIX operating system. But we also enable our UNIX products to function in the larger, "open computing" environment. UNIX computing is not "open computing" unless UNIX users can benefit from all the resources of the larger computing environment. Today Digital is the only vendor offering these capabilities. That's a serious approach to UNIX software as a part of open computing.

State-of-the-Art, Expandable RISC Hardware

The powerful combination of UNIX software and Reduced Instruction Set Computing (RISC) systems has created the fastest-growing market segment in the computing industry today.

Digital's approach to RISC-based hardware is built on the best aspects of our VAX strategy—our RISC systems are binary-compatible from the smallest workstations to the largest multiprocessor server. Your ULTRIX applications will run on the DECstation 2100—the lowest-priced RISC workstation in the business—and they will run on our DECsystem server family. You'll never face the burden of expensive rewrites and conversions.

We've designed our RISC systems to be highly expandable. We've built them on a foundation of tough, innovative engineering. Digital has built TURBOchannel—perhaps the fastest bus in the RISC business. And we offer the highest level of graphics board integration available today.

Our RISC systems support standards in every aspect of their design. These systems support DSSI, SCSI, Q-bus, fiber optic networking, Ethernet, and soon VME. And as further proof of our commitment to open computing, we've opened the TURBOchannel to the industry—at no charge.

We've built our RISC systems on widely available, standards-based technology from MIPS Computer Systems, Inc. And we're continuing to develop new RISC systems based on the latest technology from MIPS.

That's dedication to openness. Today Digital offers the lowest-priced RISC workstation, the fastest desktop graphics system, and the most expandable RISC servers. We're committed to creating RISC systems that continue to extend the boundaries of price/performance.

Digital's newest RISC-based systems are designed for use in commercial environments. The new servers are very fast, but their real strengths are in I/O, disk write speeds, storage, and communications—the features commercial users need most.

That's a serious approach to high performance RISC-based hardware for UNIX users.

Serious Support for UNIX Users

We're just as serious about support for UNIX users. During the past year, Digital has trained more than 7,000 sales and support people in our UNIX technology.

And this is only the start. Today we're working on a new generation of RISC systems, based on the MIPS technology. You'll be hearing about it in a few months. We're developing the next major release of ULTRIX, which will be based on the OSF/1 standards, and completely backward-compatible with our earlier releases of ULTRIX. Soon, we will introduce RISC-based workstations that will extend our price/performance leadership.

Is Digital serious about UNIX?

Indeed we are. We're so serious about UNIX that we've developed the best price/performance family of UNIX products in the industry. We've developed the most standards-compliant version of the UNIX operating system. And we've upheld our commitment to open computing—making UNIX a full member of the one truly open computing environment on the market today.

As you make your UNIX choices—what may well be your most important computing choices of the 1990s—doesn't it make sense to go with the company that's serious about UNIX? That company is Digital.

Rackable, Stackable VAX.

VAX 4000 Model 300 systems are now available in rack-mountable configurations—to save floor space via vertical system growth and to facilitate configuration flexibility with rack-mounted third-party gear. These VAX 4000 Model 300 systems are mechanically reconfigured in 19-inch wide ANSI/EIA and MIL-STD compatible rack-mountable chassis. Like the pedestal-mounted VAX 4000 Model 300 systems, the rack-mounted versions are available in multiuser, server, and realtime systems.

PrintServer Printers Leap Off DEC Base.

ULTRIX PrintServer software is one of the first Digital products to provide portable source code for BSD 4.3-compatible UNIX systems. It has proven to be even *more* portable than planned, as one Digital customer with a major telecommunications company just discovered. This customer recently ported the kit to an unsupported System V platform with BSD socket extensions in just a few hours. And, since the source kit comes with the unlimited right to copy within a site, access has been given to co-workers as well.

Get a VAX FAX Gateway.

Interested in saving time and money through increased user productivity and lower communications costs while eliminating the need for multiple fax machines? Then Digital's FAX Network Gateway is for you. This integrated network application allows tens to thousands of users on VAX/VMS systems to send and receive fax communications directly from their desktops. The FAX Network Gateway integrates computer applications and electronic mail systems with the versatility of fax transmission and reception, and it permits any fax machine around the globe to be a remote printer or data entry device.

VAXft System Now Price/Performance Leader.

Digital recently added a cost-effective server model to the VAXft 3000 series and, at the same time, improved price/performance of the VAXft 3000 Model 310 system—making Digital the industry leader in fault-tolerant price/performance computing, surpassing Tandem and Stratus. The new VAXft network server configuration, which controls user access to other computers on a network, improves price/performance by 50 percent for sites that want to add fault-tolerant capabilities to computing installations. The repricing of the VAXft 3000 Model 310 multiuser system translates into a 27 percent increase in price/performance.

VT1300 Works (Almost) Like a Workstation.

The VT1300 color, X Window terminal offers access to more than 6,000 VMS and 1,000 ULTRIX applications previously available only on workstations. It can also access UNIX applications. The VT1300 uses the same X graphics user interface as a workstation, and it incorporates similar display features—high-performance graphics, high resolution, and eight graphics planes with 256 displayable colors. It features a 90 nanosecond CVAX processor and graphics co-processor. Standard price of $7,495 includes 8 MB memory, a down-loadable X server software kit, a 19-inch monitor, keyboard, mouse, and manual.

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- ☎ VAXstation 3540
- ☎ DECstation 2100
- ☎ DECstation 3100
- ☎ DECstation 5000

DECstation Personal Computers
- ☎ DECstation 316
- ☎ DECstation 325
- ☎ DECstation 333

Digital Desktop Systems
- ☎ MicroVAX 3100
- ☎ MicroVAX 3300
- ☎ MicroVAX 3400
- ☎ DECsystem 5000
- ☎ DECsystem 5100

PCLAN/Servers
- ☎ PCLAN/Server 3100
- ☎ PCLAN/Server 316/333

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Whether you're a RISC/ULTRIX or VAX/VMS user, our storage and memory products work hard for you in a workstation environment.

The right disk, tape, or CDROM storage products, as well as memory products, reinforce and often enhance the features of your Digital workstations and servers. You can depend on our disk products to provide outstanding performance. Likewise our tape drives, which couple fast, high-capacity unattended backup with high data reliability and integrity. Choose the right amount of memory, and your applications run faster, with response times reduced. More memory means more performance. Not to mention that all our storage and memory products are competitively priced, supporting flexible growth paths designed to protect existing system investments.

To make planning and configuring easier, we've compiled this overview of disk, tape, CDROM, and memory products available for Digital's workstations and servers—both VAX/VMS and RISC/ULTRIX. You'll see the product options are as varied as your particular system needs.

For more detailed information on the features and benefits of these storage and memory products, contact your Digital sales representative, or call 800-DIGITAL (800-344-4825).

System	Disks	Disk Capacity	Disk Function	Tapes and CDROM	Tape and CDROM Capacity	System Memory	Memory	Option Size	Memory Slots
DECsystem 5500	RZ56 RZ57	665 MB 1.0 GB	Internal/expansion storage Internal/expansion storage	TLZ04	1.2 GB	256 MB	MS220-BA	64 MB	4
DECsystem 5100	RZ23 RZ24 RZ55 RZ56 RZ57 RX23	104 MB 209 MB 332 MB 665 MB 1.0 GB 1.4 MB	Paging/swapping Primary internal storage Expansion Expansion Expansion	TZK10 TLZ04 TZ30 TK50Z RRD40	525 MB 1.2 GB 95 MB 95 MB 600 MB	128 MB	MS44-BA MS44-DA	8 MB 32 MB	8*
DECstation 5000 - Model 200 DECsystem 5000 - Model 200	RZ55 RZ56 RZ57	332 MB 665 MB 1.0 GB	Expansion-primary storage Expansion-primary storage Expansion-primary storage	TZX10 TLZ04 TZ30 TK50Z RRD40	525 MB 1.2 GB 95 MB 95 MB 600 MB	120 MB	MS02-AA	8 MB	15*
DECstation 3100 DECsystem 3100	RZ23 RZ24 RZ55 RZ56 RZ57	104 MB 209 MB 332 MB 665 MB 1.0 GB	Internal paging/swapping Internal storage/paging Expansion Expansion Expansion	TZK10 TLZ04 TZ30 TK50Z	525 MB 1.2 GB 95 MB 95 MB	24 MB	MS01-AA	4 MB	12*
DECstation 2100	RZ23 RZ24 RZ55 RZ56 RZ57	104 MB 209 MB 332 MB 665 MB 1.0 GB	Internal paging/swapping Internal storage/paging Expansion Expansion Expansion	TZK10 TLZ04 TZ30 TK50Z	525 MB 1.2 GB 95 MB 95 MB	24 MB	MS01-AA	4 MB	12
VAXstation 3100 - Model 76	RZ22 RZ23 RZ24 RZ55 RZ56 RZ57	52 MB 104 MB 209 MB 332 MB 665 MB 1.0 GB	Internal paging/swapping Primary internal storage Primary internal storage Expansion Expansion Expansion	TLZ04 TZ30 TK50Z	1.2 GB 95 MB 95 MB	32 MB	MS44-AA	4 MB	8
VAXstation 3100 - Models 30/40 - Models 38/48	RZ22 RZ23 RZ24 RZ55 RZ56 RZ57	52 MB 104 MB 209 MB 332 MB 665 MB 1.0 GB	Internal paging/swapping Internal storage Internal storage Expansion Expansion Expansion	TLZ04 TZ30 RRD40	1.2 GB 95 MB 600 MB	32 MB	MS42-AB MS42-KA MS42-BA MS42-CA	4 MB 8 MB 12 MB 16 MB	1
MicroVAX 3100	RZ22 RZ23 RZ24 RZ55 RZ56 RZ57	52 MB 104 MB 209 MB 332 MB 665 MB 1.0 GB	N/A Internal storage Internal storage Expansion Expansion Expansion	TLZ04 TZ30 TK50Z	1.2 GB 95 MB 95 MB	32 MB	MS42-AB MS42-KA MS42-BA MS42-CA	4 MB 8 MB 12 MB 16 MB	1
VAXstation 3520	RZ55 RZ56	332 MB 665 MB	Internal storage Internal storage	TK70	296 MB	128 MB	MS60-AA MS60-BA MS60-CA	8 MB 16 MB 32 MB	4
VAXstation 3540	RZ55 RZ56	332 MB 665 MB	Internal storage Internal storage	TK70 RRD40	296 MB 600 MB	96 MB	MS60-AA MS60-BA	8 MB 16 MB	3

*Option requires two slots.

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ADVANCED TECHNOLOGY

The race is on for the world's first 64M-bit chip

Companies such as IBM are increasing their investment in the development of advanced DRAM chips

BY MICHAEL ALEXANDER
CW STAFF

A mainframe small enough to wear on your wrist like a watch. A supercomputer that easily fits on your lap. A pocket-size voice recorder that records an hour of voice without using tape. A portable high-definition television smaller than this newspaper. It seems that anything is possible with 64M-bit dynamic random-access memory chips.

Even though 4M-bit DRAMs are only now being produced in volume, and the first production samples of 16M-bit chips are slated to arrive in the coming months, the world's top semiconductor manufacturers are racing down the road to the next generation of 64M-bit chips.

About a dozen companies in the U.S., Europe and Japan are working on 64M-bit DRAM chips, including Hitachi Ltd.; NEC Technologies, Inc.; Mitsubishi Electric Corp.; Fujitsu Ltd.; Toshiba Corp.; Siemens AG; IBM; and Texas Instruments, Inc.

"Who will get there first is the big question," said Robert Frizzell, senior analyst at VLSI Research, Inc., a chip technology and market analysis firm in San Jose, Calif. The first samples will probably begin to appear in late 1993 or early 1994, according to Frizzell.

The world market for semiconductors was approximately $50 billion in 1989, with an average growth rate of 15%, according to market researchers. The memory chip market makes up more than 25% of the total semiconductor market.

Whoever gets to market first stands to gain the most and recoup what will have been a significant investment in research and development and production facilities. "A cost [of] $1 billion wouldn't surprise me," Frizzell said.

Initial price drops

The cost of a new semiconductor rapidly plummets soon after it is introduced. "One generation might come out at $200 to $400 a part, and within six months to a year, after volume production is up, that price might drop to $40 to $50," Frizzell said.

IBM, which was first in the world to produce 64K-bit, 1M-bit and 4M-bit DRAMs in production quantities, is working on 64M-bit chips for its own use, however. In October, the company opened its Advanced Semiconductor Technology Center in East Fishkill, N.Y., and said it has committed $500 million to the center to develop the next generation of 64M-bit and 256M-bit DRAM chips.

Robert de Michiell

There is general agreement that computer memory capacity should grow in proportion to its speed, if the speed is to be used effectively, according to Fujio Masuoka, a manager of the device reseach department at Toshiba's Research & Development Center in Kawasaki, Japan. He heads a team that in a matter of weeks will introduce a prototype 64M-bit DRAM.

In a paper for the Institute of Electrical and Electronics Engineers, Inc., Masuoka said the general rule of thumb is that memory capacity in megabytes should be equal to four times the processor speed in millions of instructions per second (MIPS).

Using today's 1M-bit chips, 1G byte of main memory is about what can be used to still keep reliability within tolerable limits, he said.

The latest workstations are capable of performing at a rate of more than 10 MIPS, which means their ideal memory size is more than 40M bytes, according to Masuoka. That is more than it is possible to build using 1M-bit chips. However, 4M-bit chips are ramping up in volume, and workstations with 40M bytes of DRAM have already been developed. Judging by past trends, the 64M-bit chip will probably be mass-produced in 1995, according to Kiyoo Itoh, chief researcher at Hitachi's Central Research Laboratory. Hitachi unveiled the world's first 64M-bit DRAM at a symposium on very large-scale integration circuits, held in Hawaii in June.

For 64M-bit DRAMs, engineers are shooting for circuit line widths of 0.25 microns. Etching lines that fine in a silicon wafer using existing optical or photolithography technology is difficult but not impossible. Recently, engineers at Fujitsu were able to develop a prototype 64M-bit chip using a technique called "phase-shifted" photolithography. The process makes it possible to etch lines as fine as 0.35 microns.

Several companies are working on a lithography process that makes use of X-rays, whose wavelengths are shorter than light and thus more precise (see story at left).

Keeping pace with DRAM technology

Starting with the 1K-bit chip introduced in 1970, the memory capacity of DRAM chips has quadrupled about every three years. At that rate, 256M-bit chips will debut in 1998 and 1G-bit chips will show up near the year 2000. That assumes researchers will be able to resolve what may be the most difficult challenge of all: developing the technology needed to etch circuit lines small enough to pack billions of transistors onto a piece of silicon not much larger than a thumbnail.

Today, circuit lines are etched into silicon wafers by passing a light through a mask, which acts like a photographic negative, onto a silicon wafer that has been coated with photosensitive chemicals. The silicon is dipped into an acid bath that etches the lines into the wafer. The process is called optical- or photolithography. Circuit lines can also be etched into the surface of the wafer using a process called electron-beam lithography. The drawback is that the process is too slow to mass-produce 4M-bit or greater chips in high volume.

Engineers now believe that a process called X-ray lithography will allow them to etch even finer lines than is now possible into silicon wafers with the density needed to produce 64M-bit and greater chips.

X-rays have a shorter wavelength than ultraviolet light, whose wavelengths are too large to make the ultrafine lines that are needed. Today's photolithography etching process operates at about 1 micron, or about one-hundredth the width of a human hair, which is enough to pack the equivalent of one million transistors on a single chip. In comparison, the X-ray process can etch circuit lines of about 0.1 micron, or about one-thousandth the width of a human hair — fine enough to put the equivalent of four billion transistors on a chip.

The device that can create the X-rays for circuit etching is an electron storage ring called a synchrotron. Electrons are shot into the ring and whip around at close to the speed of light. Magnets bend the path of the speeding electrons, throwing off X-rays, which are funneled down beam lines to an exposure station. The X-rays pass through a mask onto the silicon wafer.

Developing small rings

One hitch has been the need to develop synchrotron storage rings small enough to be used on the factory floor. Most of those in use now have rings that measure hundreds of feet in diameter. However, the National Synchrotron Light Source at Brookhaven National Laboratory in Upton, N.Y., has developed a prototype synchrotron that is only 13 feet long and 7 feet wide. Some Japanese firms have also built compact synchrotrons in the range of 13 to 16 feet long.

IBM, considered among the world's leaders in X-ray lithography, plans to have the first privately owned synchrotron storage ring running late next year at its Advanced Semiconductor Technology Center in East Fishkill, N.Y. The compact, superconducting synchrotron is about 20 feet long and 7 feet wide and is being built to IBM's specifications by the Oxford Instrument Group in England. IBM has been experimenting with X-ray lithography processes at the Brookhaven Laboratory and will shift its work to the new center when its own ring is operational. Researchers have used the technology to produce experimental chips with 0.25-micron line widths, IBM said.

MICHAEL ALEXANDER

EDITORIAL

'Tis the season

THAT season's drawing once more near,
So here's our yearly gift of cheer
To those whose actions, bold and meek,
Fill our pages every week.

Let's hang on Exley's Christmas tree
A phone that can't call AT&T,
Or if bidders be they still,
A candy-coated poison pill.

To Manzi, Lotus' erstwhile coach,
We take a more Novell approach,
With no more mergers in his head,
He'll sue for look and feel instead.

To Frank Dodge here are Tonka trucks
To hold his 14 million bucks
Of pay for suffering the frustration
Of taking a one-year vacation.

John Cullinane can stuff his sock
With lumps of coal called CA stock.
Oracle's gift? A quick review
On recognizing revenue.

Ingres shopping's an easy task;
All they had to do was ASK,
Though Unisys would be more merry
If Burroughs never heard of Sperry.

IBM has special reason
To party in this special season:
Its mainframe performance sure is rousin',
Almost good as RS/6000.

What gift for OS/2 is best?
How 'bout some user interest?
Or better yet, a stunning blow
like bugs in Windows 3.0.

DEC hopes to find beneath its tree
A real live Unix strategy
Or, perhaps, another chance
To stage a midrange renaissance.

Software firms should get some lifts
From brightly wrapped vaporgifts.
Apple's present: a paradigm.
Macs are cheaper, you just can't buy 'em.

Compaq wishes Yuletide bells
Would ring away those ads of Dell's,
While dealers hope the season's bargains
Aren't harbingers of future margins.

Wang folks have a special rhyme:
"Jingle bells, it's Miller time!"
While down the road at Prime, they might
Give thanks for their own Silent Knight.

For Paperback, let's trim a tree
In tinsel cloned from 1-2-3
Or type a worm-filled Yuletide chorus
On Internet for Robert Morris.

To users under outsource stress,
A season void of EDS;
To S&L staff in their grief,
A billion MIPS in tax relief.

Lest we drone on past our due,
We'll want to end by thanking you
For sticking with us through the year,
'Cause readers are why we're here.

LETTERS TO THE EDITOR

Defining success

Regarding Vivian G. Wilson's editorial, "IS: A Tough Road for Minorities" [CW, Nov. 19], the words "women," "Asians" or "Hispanics" could be substituted for "Blacks," and her advice would be equally as shallow.

I have learned over the years that there is a simple formula for success in your career. First, set goals in writing. Determine what you want to do or be. Vivian suggests management as a utopia to be sought by all. Why?

Second, determine what it takes to achieve your goals.

Third, do whatever it takes to achieve your goals. Giving 110% isn't the key. Most give, at best, a 50% effort.

I wish Vivian could meet a young man I know. He left a widow and a son in Vietnam and spent 10 years as a refugee and boat person to get to Houston. He set goals, went to school and became a programmer. We hired him this year, and he's doing great. He does his work well using a workstation and a complex keyboard. Just like you and me, right? Except, you see, this man's right arm has been paralyzed since the age of 12. Successful? We think so.

Sam W. Love
Staffing Manager
Computer Power Group
Houston, Texas

Gloom and doom

In his Viewpoint article [CW, Nov. 26], Mr. Norris sounds more like a gloomy socialist than a representative of a free-market perspective.

Consider these unsupported assertions: ". . . there must be a substantial increase in funding by the federal government . . . These objectives [technological cooperation in R&D, manufacturing and research] can be achieved only if the federal government provides more money . . ."

Government funding means you and I turn over part of our output to the government, which means we no longer have these assets to invest. The conceited, elitist presumption of those who would advocate government funding is that the judgment of a bureaucrat is somehow better than mine.

A better prescription for technology development and economic health of the nation is to disembowel government funding. Billions of dollars used for socialized purposes could then be used by individuals and industry for research, development, charity and private enjoyment. The stock market would soar, because you and I are closer to the problems of the world. The nature of knowledge itself limits the ability of the politician to solve my problems for me.

F. William Ballou
Ridgewood, N.J.

Military missteps

Kudos to the U.S. Air Force Office of Special Investigation's computer crime unit [CW, Oct. 22]. While this instance focuses on the U.S. Army Criminal Investigation Command (USACIDC), this is another situation where an organization abysmally fails to intelligently plan uses of AIS.

I am the information management specialist with responsibility for USACIDC in Europe — the *only* one. That entails responsibility for the automation planning and implementation of approximately 50 USACIDC offices scattered throughout Germany, Holland and Italy. Did these agents rely on their information management people, for example, the information management office in which I work, to initially diagnose possible data recuperative/investigative measures? Of course not. They initially relied on their own "expertise," as most users do. Users feel omnipotent when they can do this, thus they can then tackle any personal computer problem. Unfortunately, such "hacking" creates a false sense of computer literacy.

Here in Europe, there are no agents of the U.S. Army Criminal Investigation Command who are computer experts. They can use application software but are novices in diagnosing computer-related problems. I've visited enough of our offices here where I've rectified that which the "experts" supposedly cleared up.

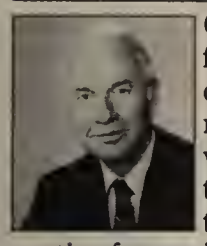
It's a shame the Army had to turn to the Air Force for such help. Better training and security software would have provided a more expeditious outcome with less frazzled agents' nerves during the investigation.

David Molush
Information Management Specialist
USAISC-CIDC
Heidelberg, Germany

Computerworld *welcomes comments from its readers. Letters may be edited for brevity and clarity and should be addressed to Bill Laberis, Editor In Chief,* Computerworld, *P.O. Box 9171, 375 Cochituate Road, Framingham, Mass. 01701. Fax number: (508) 875-8931; MCI Mail:* COMPUTERWORLD. *Please include a phone number for verification.*

Consortia offer R&D solutions

GRANT DOVE



Our country faces a growing crisis in applied research and development — the effort needed to move an invention from scientific discovery to practical use.

In its Science and Engineering Indicators Report for 1989, the National Science Board (NSB) reported a "dramatic slowdown" in funding for applied R&D. The NSB figures showed that between 1986 and 1989, spending on applied R&D slowed to an average annual growth of only 1%.

This trend is reflected most significantly in our industrial research, where the bulk of applied research and R&D takes place. At the beginning of this year, the National Science Foundation reported that we in the U.S. are experiencing negative real growth in total industrial R&D — a decline of 1% from 1988 to 1989 and the first such decline since 1975.

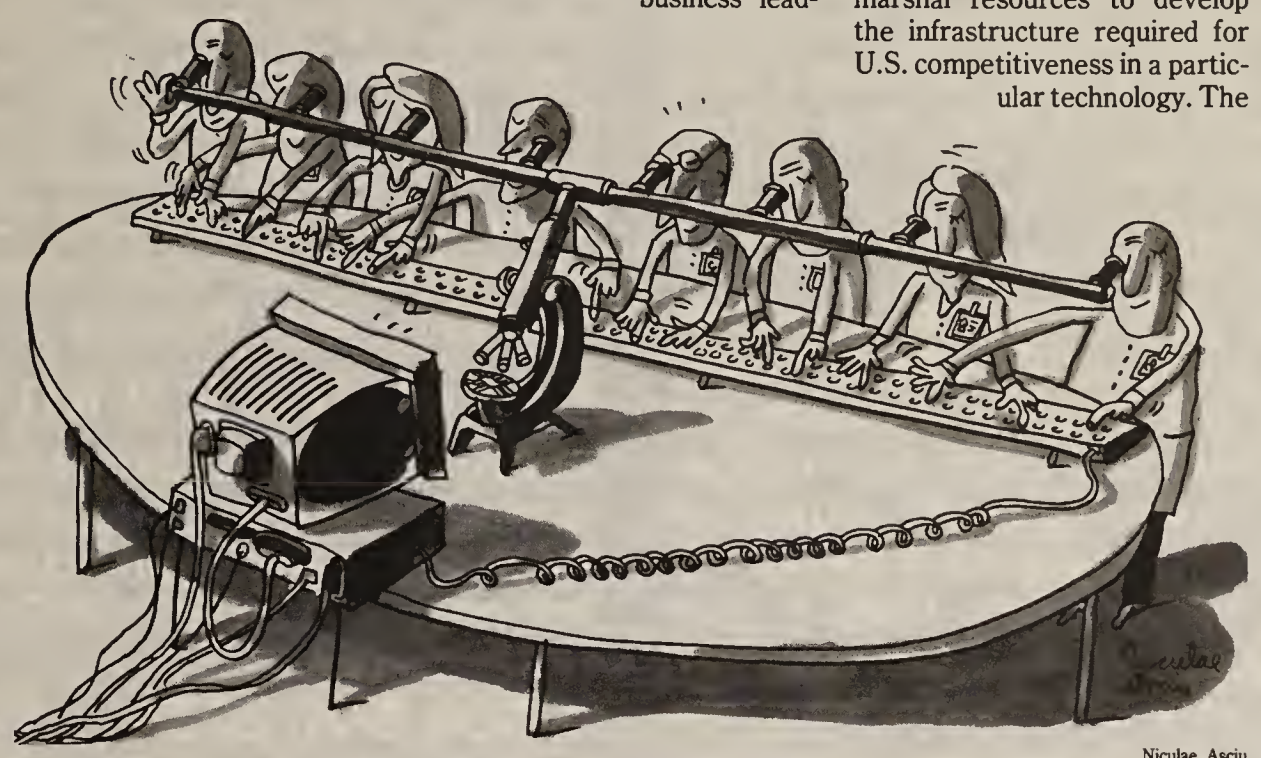
Because of competitive pressures, industry is now investing a much larger portion of its R&D budget in product development at the expense of the three- to 10-year horizon of applied research and advanced development.

Dove is the chairman of the Microelectronics and Computer Technology Corp. in Austin, Texas.

We risk an accelerating decline in the health of our industries if we fail to address this trend. We cannot simply create more resources.

We must use the resources we have more efficiently by actively pursuing strategic partnerships, leveraging our research dollars and creating incentives for advanced R&D.

This is the fundamental rationale for consortia. The Microelectronics and Computer Technology Corp. and other consortia have become centers of collaboration involving strategic partnerships between universities, industry and the government. Consortia leverage scarce resources, increase the efficiency of resource deployment and provide a vital conduit for transferring advanced technology into product development. Consider several reasons why consortia are a vital part of our national agenda:



Niculae Asciu

- Just about every U.S. business leader and government policymaker would agree that one of our biggest common headaches is the cost of capital. Consortia can help by leveraging R&D dollars and talent to develop new generic technologies. This is especially appropriate to longer range, higher risk emerging technologies.
- Consortia can encourage more efficient use of resources to accelerate the pervasive adoption of new technology. When users and suppliers cooperate, they can achieve the aggregation of volume necessary for rapid and broad deployment of new technology. This is especially applicable to technologies that may not be key differentiators in the domestic market but are serious competitors in international markets.
- Consortia can also efficiently marshal resources to develop the infrastructure required for U.S. competitiveness in a particular technology. The Semiconductor Research Corp., for example, fosters outstanding undergraduate and graduate university talent as a spin-off of its semiconductor research.
- Consortia are also useful in responding to common industry challenges, especially those in support of a broad customer base. Consortia can bring suppliers and users together to achieve cost leverage in developing industry standards for the benefit of each and of their customers.
- Consortia can play an important role in U.S. government's competitiveness policy. Strategic partnerships, implemented through industry-led consortia, can be appropriate, effective and efficient in the leveraging of public investment in science and technology.

In the recently released statement of U.S. technology policy, the Office of Science and Technology focused on the importance of collaborative efforts to create generic technologies in areas where the research is so expensive that a single company cannot adequately support the work.

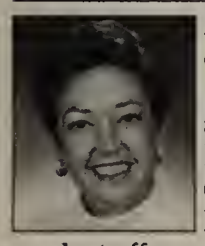
This is precisely where cooperative research is most appropriate and the benefits of leveraging are the most compelling.

Congress — and now the Bush administration — support the role of the Advanced Technology Program in the Commerce Department, which is designed to encourage collaboration in precompetitive R&D. Another encouraging sign is language in the 1991 Defense Department Authorization and Appropriations bills that would enable the Defense Advanced Research Projects Agency to distribute $50 million among consortia for precompetitive research.

The fact that more policymakers are focusing on the use of consortia is an indication that what began as an experiment is now being recognized as a key tool for maintaining U.S. competitiveness.

Lotus going a little too far with Marketplace

MARTY GRUHN



A recent article in *The Wall Street Journal* about Lotus Development Corp.'s new Marketplace product offers a peek into a technology future that could get personal for each of us very soon.

Scheduled for announcement next year, Lotus' Marketplace holds information on the names, addresses, shopping habits and likely income levels of 80 million U.S. households. This state-of-the-art database and accompanying software will be sold to businesses that want to reach very specific marketplaces. Unlike lists that are limited to one-time use, the buyers of this database can reuse it.

Gruhn is a consultant based in Mesa, Ariz.

The product offers buyer information based on census data blended with credit bureau information and categorized by postal codes. Results are further narrowed by giving each household a "psychographic" profile developed by Equifax, the Atlanta-based credit reporting bureau that is assisting Lotus in developing the product.

Remember when the government promised you that your detailed census answers would remain protected? They are, sort of. But now your local peddler can have a "blended" and enhanced version for the price of some software and a compact disc.

Marketplace fits the future trend in which vendors will become purveyors of information rather than just the hardware and software used to create and manipulate it.

At best, this will create a new era in which vital business information will be at our fingertips and decision-making will be greatly enhanced. At worst, it provides a platform for rampant abuse of personal information that you and I have not knowingly released for use.

The potential for abuse is being downplayed by Lotus, which seems bewildered by the storm of protest coming from privacy watchdogs. Lotus execs cite the benefits of putting this information into the hands of small businesses that can't afford to lease conventional lists. This, of course, is nonsense. If a business can afford Lotus Marketplace at 8 cents per name, it can afford to buy other lists on which each name costs 12.5 cents.

In the wrong hands

One area that privacy watchdogs are most upset about is potential misuse of the information. Lotus insists that the list will only be sold to legitimate businesses at verified addresses that have been cross-checked against a fraud file. Lotus promises stiff penalties for misuse.

Lotus' intent is laudable, but enforcement is the key. If the government can't locate and prosecute all the fraudulent mail and boiler-room operations, how is Lotus going to assure this information doesn't fall into the hands of the unscrupulous? The software can be copied and distributed. Sure, Lotus has a long list of companies it has sued for illegally copying and distributing its software. But the reality is that pirated copies of Lotus products still exist.

Lotus indicates that the user of Marketplace will not be able to pull up a profile of an individual, and that the software will only list an individual that fits a particular profile or set of parameters. This is computer doublespeak at its best. They can't get everything on you at one time, but they can keep searching to find out how many lists you show up on. Once completed, this information can be recompiled as a personal profile. That makes the information harder to obtain — but obtainable nonetheless.

Finally, Marketplace fans suggest that the net effect of this product will be that we will all receive a few more pieces of mail. I don't know about you, but my mailbox is already stuffed full of coupons, flyers and nuisance mail that hits the garbage without even being opened. What I don't need is a few more pieces of mail to throw away every day.

In the final analysis, Lotus' Marketplace sends a signal to all of us in the computer industry that some technological frontiers will be crossed at a high price. We need to set some standards regarding the use of information. Sure, we all want highly detailed information on our potential customers to give us the competitive edge.

The catch comes when business' right to know becomes personal, when a company's competitive edge means that it can peek into our pocketbooks and make judgment calls on which "psychographic" category we fit into.

Who wins? Companies that take personal information that individuals have not authorized for sale and sell it to anyone with the ante to get into the game.

Today, your protection is limited to writing Lotus, Equifax, or the Direct Marketing Association in New York to have your name pulled from the database. I've opted not to be victimized. My protest is already in the mail.

CSX Transportation uses BMC Software products for the long haul.

CSX Transportation, one of IBM's largest North American customers, believes that licensing BMC's IMS, CICS and DB2 products makes good business sense now and in the future.

The fast track

Kerry Tenberg, DB2 Technical Specialist says, "BMC consistently offers quality products that significantly increase our productivity. BMC also provides responsible and knowledgeable support representatives. The support is terrific."

According to Tenberg, BMC's outstanding track record at CSX with IMS and CICS, as well as DB2, is why new BMC products are evaluated; function, performance and quality are why BMC products are brought on board.

The long haul

"To help us stay on the leading edge of technology, BMC provides continuous product growth and evolution. For instance, we've been extremely pleased with how fast BMC's DB2 products exploit new DB2 capabilities. Our participation in BMC product development focus groups has convinced us that BMC's commitment to future development will continue," says Tenberg.

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DEC sends network message

ANALYSIS

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — "All dressed up and no place to go" is how one industry analyst summed up Digital Equipment Corp.'s software announcements last week.

Yet that said more about what is seen as DEC's marketing ineptitude than about the additions to its Network Application Support (NAS) program of software, services and tools for multivendor networking.

"Technically, DEC has a lead over IBM and other vendors in terms of the basic software and technology," said Judith Hurwitz, an analyst at Patricia Seybold's Office Computing Group in Boston. "As far as communicating that, they do a lousy job."

What DEC unveiled was one real product — a high-level application programming interface called DEC Message Q — and plans for an object-oriented environment called Application Control Architecture (ACA).

DEC also pledged to support all of the Open Software Foundation's Distributed Computing Environment (DCE) technologies, which include standards-based technologies such as the X.500 communications protocol or Carnegie Mellon University's Andrew File System.

"DEC is the only one to belly up to [the] bar and say they'll put in full DCE, and that will be their method of communicating between heterogeneous systems," said John Dunkle, vice president of Workgroup Technologies in Hampton, N.H.

ACA specifications

Next month, DEC will supply the architectural specifications for ACA, but no services will show up until summer 1991. Tools to develop user applications will be on the market in the fall of 1991 for DEC's VAX/VMS, Ultrix, OS/2 and MS-DOS.

In the meantime, DEC said it will seek industry blessings for its new architecture from the Object Management Group, a standards body for object-oriented technologies.

Once applications start rolling out from independent software vendors (which play critical roles in ACA's success), users could use ACA to transparently link applications such as spreadsheets, databases and word processors across the network.

Introduced in 1988, NAS has quietly expanded to include a wide range of software and services that allows information and data sharing between multivendor networked computers. The operating systems included in NAS are VMS, Ultrix, OS/2, MS-DOS, Unix and Apple Computer, Inc.'s Macintosh.

As the DEC equivalent to IBM's Systems Application Architecture (SAA), NAS should be a household word among DEC customers. Yet when Workgroup Technologies polled 200 DEC users, Dunkle said, they were uncertain about what NAS includes. "DEC has not taken the high visibility position that NCR has with Cooperation or IBM has with SAA," he said.

DEC Message Q could be just the kind of product DEC needs to boost its visibility in network interoperability, according to some analysts.

Unlike the other NAS services introduced so far, Message Q is slated to arrive in February with versions for several platforms at once: VMS, Ultrix, OS/2 and MS-DOS. There is also a VMS/LU6.2 option that provides data interchange and interoperability among applications residing on IBM systems.

For more than one year, the MIS department at the Allen-Bradley Industrial Computer and Communications Group in Twinsburg, Ohio, has been using DEC Message Q to integrate communications between a corporate IBM mainframe in Wisconsin and factory shop-floor Vaxclusters in Ohio.

"We're just now going to production with our first application and will be working on an automated, point-of-use inventory system," said MIS Manager Michael Krueger.

A division of Rockwell International Corp., Allen-Bradley manufactures programmable industrial controllers. The company is decentralizing its operations, moving some applications from its IBM 3090 Model 500S to the shop-floor VAXs. The Message Q interface makes communications between the IBM and DEC systems easier by "providing low-level communications capability that we would have had to build otherwise," Krueger said.

Prices for the messaging interface product vary according to platform. There are three different DEC VAX/VMS licenses, priced from $4,000 to $12,000, and two Ultrix licenses: a $4,000 version for reduced instruction set computing Ultrix systems and a $9,000 version for VAX/Ultrix systems. DEC Message Q is priced at $200 for the MS-DOS version and $250 for the OS/2 version.

IBM plans high-end AS/400 in 1991

BY MICHAEL FITZGERALD
CW STAFF

ROCHESTER, Minn. — Saying IBM intends to plot its course for the Application System/400 based on "market-driven openness" in 1991, Robert LaBant, IBM's vice president and general manager of application business systems, recently provided an overview of its 1991 strategies for the AS/400, including a new high-end system.

Openness should in no way be confused with support for Unix, LaBant emphasized. Instead, he said, the term refers to improving the portability of application software, not of OS/400, the mid-range computer's operating system.

LaBant added that IBM intends to address customer "wants," including common communications standards, the ability to share data among different installed systems, more widespread use of software and application portability. LaBant also said IBM would continue to enhance OS/400 to better support personal computers and networks and give interoperability with other vendors' large systems.

"We want to bring more value-added things to the customer to enable them to achieve solutions," said LaBant, who noted that the major focus for IBM would be improving the relational database, the system manager, the network manager and the system security on the AS/400.

Dave Andrews, president of ADM, Inc., an AS/400 consulting firm based in Cheshire, Conn., said he expects IBM to introduce a multiprocessor version of the AS/400 by May 1991. The whole AS/400 line will be refreshed, Andrews said, with new technology similar to the strategy IBM used when it replaced the AS/400 B models with AS/400 Cs.

Senior editor Maryfran Johnson contributed to this report.

Kent Hanson

IBM's Labant *included a new high-end system in his company's strategies for 1991*

Knowledgeware announces OS/2-compatible tool set

BY ROSEMARY HAMILTON
CW STAFF

Knowledgeware, Inc., one of IBM's key business partners in the computer-aided software engineering (CASE) market, recently announced a host-based development tool set that uses OS/2 workstations as front ends.

ADW/MVS, scheduled for initial release in the first quarter of 1991, was designed for information systems shops that do software development on mainframes with OS/2 workstations serving as front ends. It is a set of design tools that works with an encyclopedia component, which runs on IBM's DB2 and manages the development environment. The setup is similar to IBM's AD/Cycle application development strategy, which will be managed by Repository Manager and is intended to work with OS/2-based front ends.

Michael Ryan, Knowledgeware's senior vice president of research and development, said the goal is to eventually integrate ADW/MVS with IBM's Repository Manager. Initially, the company will ship a data transfer tool for IBM's Repository Manager that would allow a customer to share data between the new Knowledgeware host-based environment, ADW/MVS, and the IBM platform.

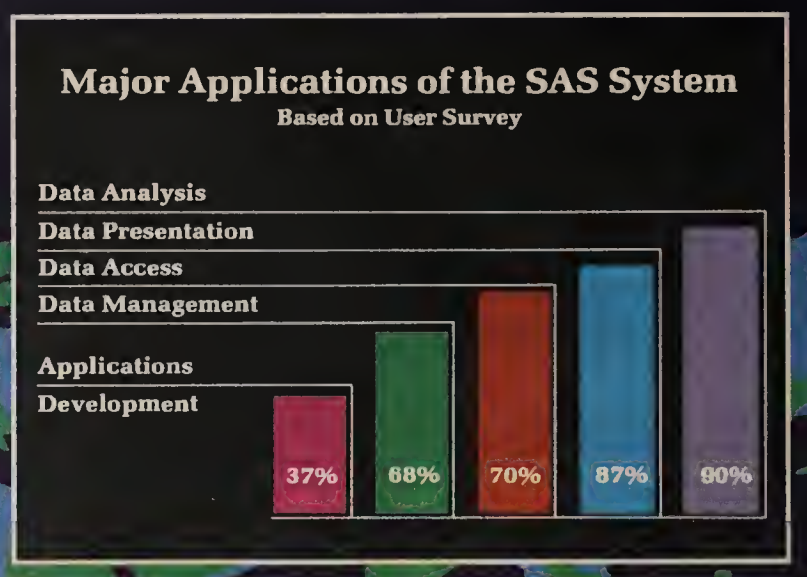
The tool, called the Repository Enablement Facility, will also work with Knowledgeware's ADW/MF host-based tool set, which uses MS-DOS-based workstations as front ends, Ryan said.

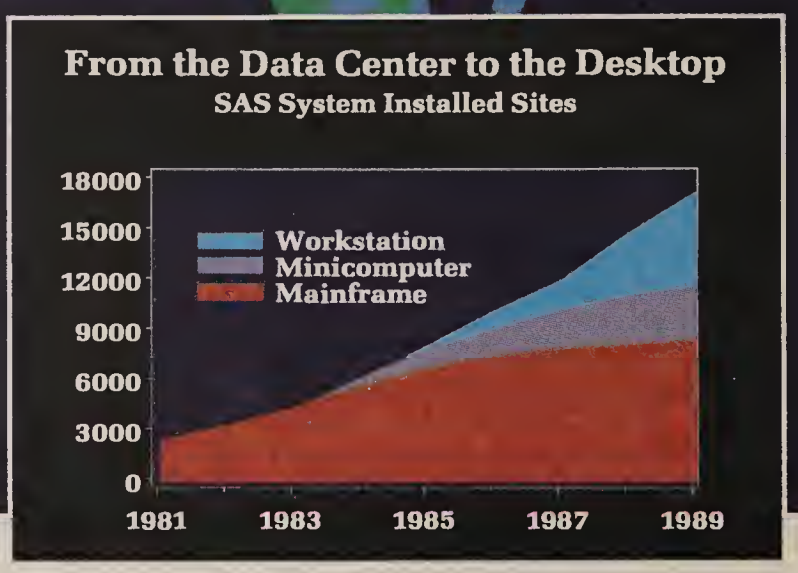
He also said ADW/MVS is not intended as a substitute for IBM's host-based CASE platform, even though it has its own encyclopedia component that runs on IBM's DB2. He said there are some similarities between the Knowledgeware encyclopedia and IBM's Repository Manager but added that the plan is to integrate ADW/MVS with Repository Manager, which will manage various tools beyond the Knowledgeware environment.

A select group

Knowledgeware is one of a select group of software companies that was anointed as an AD/Cycle business partner when this application development strategy was announced in 1989. The company has been working with IBM in the development of the information model — the guidelines contained in Repository Manager that will govern how applications are developed.

The company and the other business partners are also required to tailor their products to the IBM AD/Cycle platform in order to be compatible with the IBM CASE strategy. This typically involves two steps. First, they must move MS-DOS-based CASE tools to the OS/2 operating system. Secondly, they must integrate those OS/2-based tools to IBM's Repository Manager.





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Seeking out children in need

BY SALLY CUSACK
CW STAFF

BENTON HARBOR, Mich. — On any given day in the U.S., 1,840 children are abused, and every 53 minutes, a child dies because of poverty or related causes.

Time is essential to those working with abused children, and inadequate, improperly recorded or misplaced information can literally mean the difference between life and death.

The Berrien County Department of Social Services Office in Michigan is piloting a Unix-based computer platform to reduce this risk element by providing instantaneous on-line access to all client-related information.

Called the Childcare Protection System, the software product is offered by Bull HN Information Systems, Inc. in Billerica, Mass., and runs on a Bull XPS 1000 minicomputer under the AT&T Unix System V operating system.

"We have access to critical, case-related information 24-hours a day," said Jane Mecomber, a children's protective services specialist at Berrien County. "Using the laptop computer, we can do history checks and verify facts when we're on call. Before, we didn't have access to this data after regular working hours."

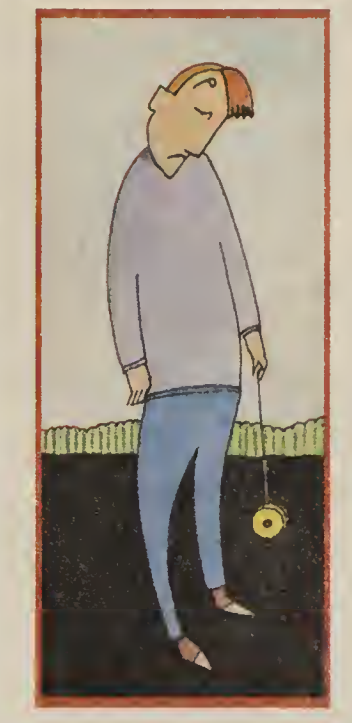
Faster turnaround

Using the system, caseworkers can update files as necessary on a round-the-clock basis, using either home personal computers or the department's Zenith Data Systems' laptop computer via a cellular telephone or modem. This allows them to respond accurately and quickly to calls and emergencies that are received after normal working hours.

According to Mecomber, if there is an emergency and a child has to be removed to foster care, the placement information can be immediately accessed. "This happens several times a week," she added, "and it used to take hours of calling around to locate appropriate and available care."

Workers access the minicomputer via one of six Bull terminals over 2,400 bit/sec. asynchronous lines, and the system incorporates two software products: the Uniplex package, which includes a word processor, spreadsheet, diary and calender management system; and the Oracle relational database management system from Oracle Systems Corp.

Additional features include a risk assessment function, designed to aid caseworkers in determining the risk of further harm or neglect to the child using the risk assessment model of their choice.



By reducing the administrative burden, the software also provides more time for caseworkers to interact directly with children and their families. Prior to the Bull system installation, protection service workers at Berrien County relied on endless rows of file cabinets stuffed with folders to house their valuable case histories and client status reports. Each case was tracked manually, making it more difficult to identify related cases and maintain finely detailed records.

"It changes how we use our time," Mecomber said. "Now we have much better documentation, and we're able to cross-reference cases more thoroughly."

The Bull system, which has been in development at the Berrien County facility for three years, is now available commercially. Pricing for the system begins at $80,000.

Alaska Air uses systems to keep on profit course

ON SITE

BY JEAN S. BOZMAN
CW STAFF

SEATTLE — Alaska Airlines, based here for 35 years, puts as much care into targeting its software projects as its pilots put into landing in subzero conditions on a field of sheer Alaskan ice.

The little airline, with $916.5 million in annual revenue last year and just 1% of the U.S.' airline business, has been profitable during each of the last 18 years, and it expects to report $1 billion in revenue in 1990.

Although relatively small, Alaska Airlines and its subsidiary, Horizon Air, Inc., were able to take home a hefty $43 million in after-tax profits last year by focusing its efforts where they are most needed.

In the area of transportation, this has meant adding new routes to fly Alaskans south to California, Seattle and Mexico instead of just flying the traditional routes that bring snowmobilers north to Anchorage.

In the area of software, this has meant developing custom software that adds value to Alaska Airlines' ticketing and customer service and buying the rest of the needed software — sometimes from other airlines.

"Our software is very tactical. It's very close to the needs of the business," said Bob Reeder, director of applications development at the airline. "We do a lot of integration, but we also buy a lot of software." No matter what their purpose, all applications must interface with System One, the IBM-based airline reservations system run by Continental Airlines. Over the years, use of this outsourced reservations service has saved Alaska Airlines millions of dollars in overhead costs, according to Alaska Airlines officials.

Even hardware purchases are carefully considered for possible impact on the bottom line. "We don't want new products to drive the IS process," said Dan McDonald, director of data processing services. "We won't jump on a technology just because it's there." The latest and greatest holds little appeal for the information systems managers here; instead, they prefer the pragmatic approach of using proven technology that enhances existing systems.

Don Conrad

Alaska Airlines' *Haslund, Reeder and McDonald are working to develop 'tactical' systems*

Saving money is a priority, as long as it doesn't adversely affect the business. In 1987, Alaska Airlines combined a VM system and two MVS systems that had been running on two different IBM 4300 machines and placed both on a single Amdahl Corp. 5890 mainframe.

Batch and on-line operations are now running under the Amdahl machine's Multiple Domain Facility but are segregated into separate memory partitions. As a result, Alaska Airlines pays just one IBM license fee for MVS, saving thousands of dollars in support costs each year.

The airline converted from Sperry Corp. 1100 mainframes in 1985. "Software drove the move away from Sperry, because we didn't see any future in that system," said Leif Haslund, assistant vice president of administration, who is Alaska Airlines' equivalent of a chief information officer.

Since then, Alaska Airlines has used an IMS database management system from IBM to track sales data. Meanwhile, McDonald and Reeder are studying IBM's DB2 relational database, but they are in no rush to install

Continued on page 28

Swiss are betting futures

BY MICHAEL FITZGERALD
CW STAFF

FRANKFURT — This nation's futures exchange threw the switch on its computerized trading system recently, making it the second such European exchange to go electronic in less than one month.

The Deutsch Terminbose (DTB) followed on the heels of the Swiss Options and Financial Exchange (Soffex), a *Computerworld* Smithsonian award winner that implemented an electronic exchange for Swiss stock futures on Nov. 9.

The DTB and Soffex have said they will tie their trading hours to those of the established capital markets, although the DTB will allow an hour of post-market trading. Still, the actions are being seen by some as a harbinger of a worldwide electronic trading system.

"It's just another step toward the inevitable creation of a global electronic marketplace," said Junius Peake, chairman of the Peake/Ryerson Consulting Group in Englewood, N.J. Peake added that the U.S. exchanges were behind the rest of the world in terms of automation.

The DTB and Soffex systems also claim to be the first to offer complete integration of automated clearing and automated trading functions.

Trading options and futures was illegal in Switzerland before Soffex was created in 1988, and German law before 1990 treated options losses as gambling debts, which can be walked away from. This had limited the market.

The two exchanges expect to gain liquidity from the opening of futures trading. The DTB also hopes to take at least half of the 40,000 to 45,000 daily contract volume for Bund futures, the long-term German government bonds traded on the London International Financial Futures Exchange.

Trades are made through a blind matching system, with the computer acting as a clearinghouse for all trades, much like the system to be employed by Globex, the automated futures exchange being developed by the Chicago Mercantile Exchange, the Chicago Board of Trade and Reuters Holdings PLC.

High costs

The Swiss have spent more than $50 million to develop their new exchange, the Germans $60 million. The DTB's option trading system was purchased from Soffex.

Both the DTB and Soffex rely on host clusters and distributed processors from Digital Equipment Corp., although the DTB's futures trading software has been customized to allow exchange members to connect IBM's first-generation AIX machine, the 6150.

Soffex intends to purchase DEC VAX 9000s to run its system sometime next year, possibly in the first quarter, and the DTB is looking at the DEC mainframe as well. Both exchanges are engaged in heavy development of new products.

In another recent move, the Paris Bourse flipped the switch on its new Reglement et Livraison de Titres system, based on an IBM 3090 mainframe, which will be used to clear and settle stock deals.

The Paris Bourse expects to be able to challenge the London exchanges for international business through the resultant cost savings and efficiencies.

Alaska Air

CONTINUED FROM PAGE 27

it. Still, the airline did not flinch at installing a more costly MVS/ESA environment late last month, after several months of testing.

Personal computers are being added wherever practical, and several key PC-based subsystems were installed during the last two years.

When possible, the PC's on-board intelligence is put to work to request data from the System One reservations system, which is otherwise accessed from dumb terminals.

Reeder's developers are working on software systems to automate that process, leveraging PC power to request additional System One data as needed.

One such application is a system called Wally, which reassigns passenger seats when operations managers have to change the type of aircraft used on a given flight.

However, PCs are not considered a cure-all at Alaska Airlines. Yield management is done over a Novell, Inc. local-area network, but Alaska Airlines' frequent-flyer program is managed from the Amdahl mainframe.

"It's tough to turn mission-critical systems over to PCs, because their operating systems aren't sophisticated enough to support them," Haslund said. "We put applications on PCs because it solved a business problem. We haven't had a religious experience that says PCs are a better platform than mainframes."

Behind all of the technology changes is a gritty philosophy that matches the highly competitive business Alaska Airlines' IS group supports.

"We aren't delivering the most esoteric solutions here," Reeder said. "We're being flexible so that we can adapt to changing business conditions. But then, you don't fly into Alaska in the winter unless you're adaptable."

HARD BITS

Sears named technology innovator

Digital Equipment Corp. named **Sears, Roebuck and Co.** the winner of the Retail Innovation Technology Award last month for its use of innovative computer technology. Sears won for its integration of a merchandise assortment planning process that relies on distributed database technology, networking and extensive end-user computing.

SAP America, Inc. has entered an agreement with professional services firm **Deloitte & Touche** for the purchase and support of SAP's R/2 system. The R/2 system is on-line, real-time mainframe software for handling a range of business applications.

System Software Associates, Inc. has announced the availability of AS/SET Integrator, a new computer-aided software engineering product that integrates **Knowledgeware, Inc.**'s Information Engineering Workbench with System Software's AS/SET on the IBM Application System/400. The integrator product is currently available and is priced between $3,000 and $10,000.

Wang Laboratories, Inc. and the **University of Southern California** recently announced an alliance for marketing automated student admissions processing software. The product reportedly allows admissions counselors to view electronic images of student applications, transcripts, letters of recommendation and other paper-based documents interactively with computerized student data records.

Sun Data, Inc. and **Sungard Recovery Services, Inc.** are currently cooperatively marketing disaster recovery services for IBM midrange systems, including the Application System/400, System/36 and System/38. The two firms will share disaster recovery facilities and personnel as well as support capabilities.

Cognos presents VAX CASE tool

BURLINGTON, Mass. — Cognos, Inc. last week introduced a computer-aided software engineering (CASE) tool aimed at small to midrange VAX/VMS systems from Digital Equipment Corp.

Cognos officials said its Powercase software is the first such tool to be fully integrated within the company's Powerhouse fourth-generation language.

The tool enables users to create applications — from design to documentation — more quickly within Powerhouse. It is also integrated with ANSI, SQL and DEC RMS flat files.

According to Kristina Sorensen, an analyst at Boston-based Aberdeen Group, "Many CASE tools serve only one aspect of the application development process, such as just the design or the code generation."

Sorensen added, "Powercase's strength is that it covers all aspects of applications development."

Priced at $15,000 for the initial license, Powercase is available immediately for VAX workstations running Decwindows.

MARYFRAN JOHNSON

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SAS Institute announces plan to link with Ingres database on VAX

BY SALLY CUSACK
CW STAFF

LAS VEGAS — SAS Institute, Inc. chose Dexpo West '90 as the place to announce that it is working on an application that will link the SAS Applications System under Digital Equipment Corp.'s VMS environment with Ingres Corp.'s Ingres database software.

According to SAS, the product is still in the experimental testing phase and is scheduled for release in the second quarter of 1991. When completed, the interface will reportedly allow VMS users to seamlessly access Ingres tables directly from within the SAS Applications System or extract data for placement in SAS data files. SAS products are currently installed at 3,500 DEC VAX sites worldwide.

SAS/CPE upgraded

In addition, SAS has released an enhanced version of the SAS/CPE performance evaluation software for DEC VAX system users.

Release 2.0 was designed to allow systems analysts to collect, analyze and report on current system use as well as anticipate adjustments for future VAX performance requirements. The software offers a menu-driven screen interface and a command-line interface that mimics standard VMS utilities, the vendor said. First-year license fees for SAS/CPE range from $575 to $4,100.

The Cary, N.C.-based software company also revealed that the SAS Applications System will soon include vector processing support for DEC VAX 6000 and VAX 9000 users.

Beginning next month, SAS will release a collection of vector manipulation subroutines that use the VAX Vector Architecture.

Dexpo West draws vendors

BY GARY BYRNE
CW STAFF

LAS VEGAS — At the Dexpo West '90 conference last week, Nicholson Systems announced an upgrade to its User Shell, a window-oriented interface designed for Digital Equipment Corp. VAX/VMS terminals.

Version 2.1 enables an organization to configure User Shell for each user or user group. The product uses VMS security to control access to available commands.

License fees range from $495 for a single user to $9,995 for unlimited users.

Some of the other products announced at the show included the following:

• Russell Information Sciences, Inc.'s Xecutive Office System, a menu-driven environment that protects the VMS operating system from user interference.

A menu interface enables any application, utility or custom Digital Command Language procedure to be added to a user's menu in less than one minute.

The product is available for VAX or Vaxstation systems running VMS. Pricing ranges from $795 to $34,995, depending on type of VAX configuration.

• Version 4.0 of Synthesis Computer Technologies, Inc.'s Case/ap application development system, a tool that enables users to produce C or Cobol code from within a VAX/VMS environment.

Pricing ranges from $5,000 to $75,000, depending on CPU size.

• Version 4.0 of Executive Software International's Diskeeper/ Plus on-line disk defragmenter. The product features a DK View utility that enables VAX managers to monitor disk fragmentation and defragmentation activities in real time.

Pricing ranges from $250 to $10,600, depending on configuration.

The company also unveiled I/O Express, an automatic data caching software package that was designed for VAX/VMS systems. A proprietary algorithm enables I/O Express to determine which blocks to keep in cache, depending on the type of application being run, the vendor said.

Pricing ranges from $375 to $16,000, depending on CPU size.

• Networking Dynamics Corp.'s Multisessions 2.0, which allows VAX/VMS users to run multiple sessions from any VT-style terminal.

License fees for stand-alone CPUs range from $1,099 to $8,900, depending on VAX configuration.

• Clearpoint Research Corp.'s TSB-T02 ($54,000), an IBM 3480-compatible, rack-mountable, 18-track, ½-in. cartridge-tape subsystem designed for DEC VAX 6000 and 8000 series systems.

Clearpoint also announced that its DCME-D52, a memory upgrade for the Decstation 5000 Model 200, is now available in 8M- and 32M-byte versions, which are priced at $2,000 and $10,000, respectively.

• Version 3.1 of Gray Matter Software Corp.'s Scriptserver Printing System, designed to interface with and manage local or network attachments of multivendor Adobe Systems, Inc. Postscript-based printers to VAX/VMS systems.

License fees range from $495 for Vaxstations to $3,895 for Vaxclusters.

For once, an announcement that will have businesspeople jumping into windows.

Until now, a lot of businesses have been hesitant to take the plunge into Windows. People have wondered, for instance, whether critical applications and viable communications would become available.

Well, if we may be so bold, we'd like to give you a little push – by introducing you to DCA®'s new IRMA™ WorkStation for Windows.

A BREAKTHROUGH IN 3270 CONNECTIVITY: IRMA WORKSTATION FOR WINDOWS.

In the Windows 3.0 operating environment, only IRMA WorkStation for Windows gives you a choice of single (CUT) or multiple (DFT) sessions via coaxial cable, remote SDLC or token-ring connections, as well as asynchronous connections.

It also gives you 3270 terminal, 3270 printer and asynchronous terminal emulations, and an extensive range of 3270 and asynchronous file transfer protocols, including DCA's and IBM®'s. Both DCA and IBM hardware are supported, as well.

All of which means that you won't have to keep reinvesting in new software as your business's needs change.

In addition to its tremendous flexibility, IRMA WorkStation for Windows is quite simple to use, which helps boost productivity.

For instance, mainframe data can be directly embedded into a word processor or spreadsheet, using DCA's QuickScript™ and Windows Dynamic Data Exchange.

Only IRMA WorkStation for Windows supports APPC and supplies you with a user interface that conforms to IBM's SAA/CUA standard. It also provides you with a transparent migration path to OS/2,® using DCA / Microsoft® Select™ Communications Workstation.

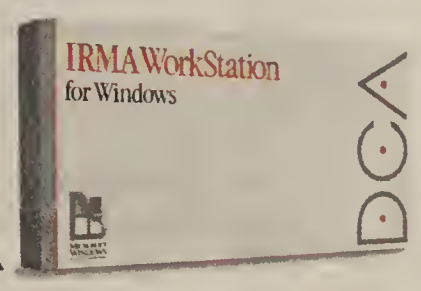
TRADE UP TO THE MOST FEATURE-RICH SOLUTION FOR $149.

Best of all, from now until March 29, 1991, we'll let you trade up from your old 3270 communications software – regardless of who you bought it from – for just $149 per unit (the suggested retail price is $495). For more information or to order, call 1-800-289-4DCA, ext. 66E (please have a photocopy of your master diskette on hand to fax in to DCA as proof of purchase).

It's easy. Just take a deep breath. Close your eyes, if you feel like it.

And jump.

DCA



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"The IEF is a superior tool for implementing Information Engineering because it integrates the entire process from planning through code generation. We're deploying the IEF throughout the corporation."

David V. Evans
Vice President
Director, Information Systems
J.C. Penney

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Mark Quinlan
Senior Programmer/Analyst
Huntington National Bank

"To meet the dramatically reduced time-to-market requirements for our products, we need high-quality systems that can be changed fast. That's why we've chosen the IEF as the CASE solution for our entire organization."

John Pajak
Executive Vice President
Mass Mutual Life Insurance

"The strengths of the IEF are clear-cut. One obvious quality advantage is that application changes are made to diagrams, not code. This ensures ongoing integrity —the specification always matches the executing system."

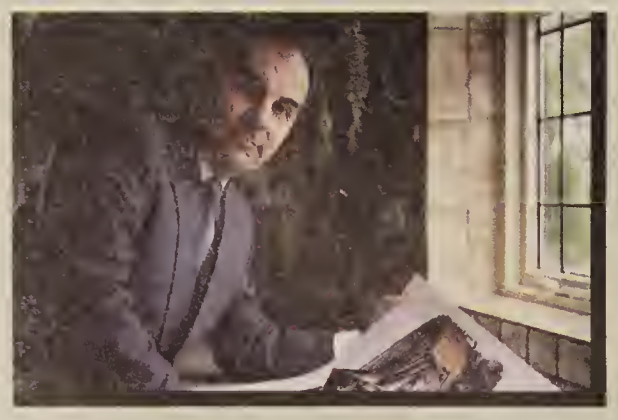
Paul R. Hessinger
Chief Technology Officer
Computer Task Group

"I've seen other CASE tools fail, so I raised the bar high when we evaluated the IEF. It passed with flying colors. I could not be happier with my decision to adopt the IEF company-wide."

John F. Mott
President
AMR Travel Services

"Our users were extremely pleased when we finished our first project—a 60-transaction system—in one-half the budgeted time. We had tried interfaced CASE tools without success. IEF integration makes the difference."

Giorgio Sorani
Division Head – MIS
Lubrizol



"We are using the IEF to develop a new generation of manufacturing systems replacing over 300 existing systems. We estimate that IEF will increase our productivity by between 2-to-1 and 3-to-1 for new systems development.."

Wal Budzynski
Head of Operations, Systems/Computing
Rolls-Royce

"We used the IEF to rebuild our aging Frequent Flight Bonus system. With DB2 tables of up to 52 million rows, we needed high performance. And we got it...98% of our transactions complete in less than 3 seconds."

Cloene Goldsborough
Director of Data Resource Management
TWA

"Our first IEF system was completed faster, and with fewer errors, than any system I've ever seen. If I had to go back to the old ways, I'd find another job...outside the DP world. It means that much to me."

Mogens Sorensen
Chief Consultant
Nykredit (Denmark)

op information systems with uctivity and maintainability.

The success of Texas Instruments CASE product is proven—in the field.

Major companies have used TI's CASE product, the Information Engineering Facility™ (IEF™), for everything from rebuilding aging high-maintenance-cost systems to development of new enterprise-wide strategic systems.

Study shows zero code defects.

The quality of IEF-developed systems is remarkable. In recent CASE research by The Gartner Group, application developers were asked to report the number of abends they had experienced. (An "abend" is a system failure or "lock-up" caused by code defects.) *IEF developers reported zero defects—not one abend had occurred in IEF-generated code.*

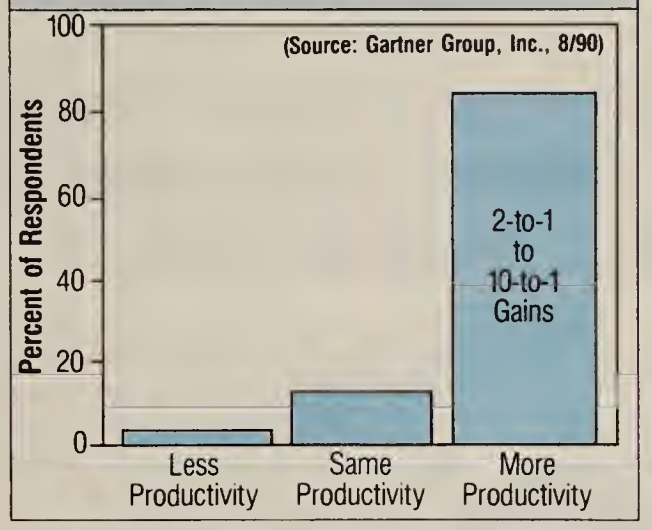
Maintenance productivity gains of up to 10-to-1.

In this same study, developers were asked to compare IEF maintenance productivity with their former methods. Of those responding, *more than 80 percent had experienced gains of from 2-to-1 to 10-to-1.* (See chart.)

Specifications always match the executing application.

With the IEF, application changes are made to diagrams, not code. So, for the life of your system, specifications will always match the executing application. The Gartner Group research showed that *all* IEF users who reported making application changes made *all* changes at the diagram level.

IEF Maintenance Productivity Compared to Traditional Techniques.



Developers were asked to compare IEF maintenance to former methods. Of those responding, more than 80% reported productivity gains of from 2-to-1 to 10-to-1.

Mainframe applications can be developed and tested on a PC.

With our new OS/2 toolset, you can develop mainframe applications, from analysis through automatic code generation, on your PC. Then, using the IEF's TP monitor simulator and the diagram-level testing feature, you can also test these mainframe applications without ever leaving the PC.

More environmental independence coming soon—develop on PC, generate for DEC/VMS, TANDEM, UNIX.

The IEF has generated applications for IBM mainframe environments (MVS/DB2 under TSO, IMS/DC, and CICS) since early 1988. Soon you'll be able to develop systems in OS/2 and then automatically generate for other platforms. DEC/VMS, TANDEM and UNIX are scheduled for availability in 1991. More will follow. We are committed to increased environmental independence in support of the Open Systems concept.

We are committed to standards.

IEF tools and IEF-generated code will comply with standards as they emerge. We will adhere to CUA standards and to the principles of IBM's AD/Cycle and DEC's Cohesion—and we will support Open Systems environments centering around UNIX. In any environment, the COBOL, C and SQL we generate adhere closely to ANSI standards. Our presence on standards committees helps us keep abreast of ANSI and ISO developments affecting the CASE world.

Full-service support.

Of course, our technical support, consultancy, training courses, satellite seminars, and other informational assistance will continue apace. We also offer re-engineering and template services. This full-service support will remain an integral part of the IEF product.

For more information, including a VHS video demo, call 800-527-3500 or 214-575-4404.
Or write Texas Instruments, 6550 Chase Oaks Blvd., Plano, Texas 75023.

TEXAS INSTRUMENTS

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NEW PRODUCTS — SOFTWARE

Unix software

Interactive Development Environments, Inc. has announced that Software Through Pictures Release 4.2 is now available for Sun Microsystems, Inc.'s Openwindows Version 2.0 application environment and Sun's Sparcstation 2 workstations.

The product allows users to set up an X Window System X11-based software development center that consists of a Sun Sparcserver 490 to Sparcstation SLC combined with an X11 display server.

Single license fees range from $5,000 to $21,000, depending on configuration.

Interactive Development Environments
595 Market St.
San Francisco, Calif. 94105
(415) 543-0900

Applications packages

Andersen Consulting, a division of Arthur Andersen & Co., has introduced job-shop software modules as part of its MAC-PAC integrated manufacturing, distribution and financial application software package, which was designed for IBM Application System/400s.

The modules enable users to manage inventory, purchasing, planning, job control and cost functions within a job-shop manufacturing environment.

Pricing ranges from $8,000 to $30,000, depending on the hardware model.

Andersen Consulting
69 W. Washington St.
Chicago, Ill. 60602
(312) 580-0069

IBM has announced an enhanced version of its Optimization Subroutine Library (OSL), a mathematics package designed to allow users of workstations, mainframes and supercomputers to solve complex applications.

The product can find a series of optimal answers after an initial calculation has been done without having to recalculate the entire problem, the vendor said.

OSL runs on IBM Personal System/2s, RISC System/6000s and all System/370 and 390 processors.

Pricing ranges from $2,285 to $149,200, depending on the type of system used.

IBM
T. J. Watson Research Center
P.O. Box 218
Yorktown Heights, N.Y. 60598
(914) 945-3471

Tesseract Corp. has announced a set of human resources applications designed for midsize firms and larger organizations with limited resources.

HRMS Express enables users to enter a new employee's record into a single database that contains information on all employees and work with the same data throughout other applications.

The product features predefined table entries and code sets, established screen definitions and implementation aids, the vendor said.

It runs on IBM mainframes under DOS/VSE and MVS and cooperatively under OS/2 or DOS Version 3.0. Pricing starts at $75,000.

Tesseract
150 Spear St.
San Francisco, Calif. 94105
(415) 543-9320

NEW PRODUCTS — HARDWARE

Data storage

Hewlett-Packard Co. has announced plans for its HP 9000 Series 800 and HP 3000 Model 900 computers to support the HP Series 6300 Model 20GB/A rewriteable optical-disc library.

Users of HP 3000 Model 900s running the HP MPE/XL 3.0 operating system will now be able to streamline backups using the Model 20GB/A optical library and the company's HP Turbostore/XL II backup software.

A rack-mount option for the HP Series 6300 Model 20GB/A was also announced. The Model 20GB/A with rack-mount option is available for HP 9000 Series 3000 workstations for prices ranging from $36,000 to $84,000, depending on configuration.

Hewlett-Packard
3000 Hanover St.
Palo Alto, Calif. 94304
(800) 752-0900

Perceptics Corp. has added the Triple Drive Pack 525 to its line of optical subsystems for Digital Equipment Corp. VAX/VMS and Unix workstations.

The TDP-525 provides slightly less than 2G bytes of write-once data storage. Its multiple optical-disc drives are connected to a host workstation via a small computer systems interface, and its Laserware software package makes the optical-disc drives transparent to the workstation's operating system, according to the vendor.

The product is priced at $17,950.

Perceptics
725 Pellissippi Pkwy.
Knoxville, Tenn. 37933
(615) 966-9200

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Because of our long-term recruitment success, we place 100% of our national media advertising in one publication. *Computerworld.*

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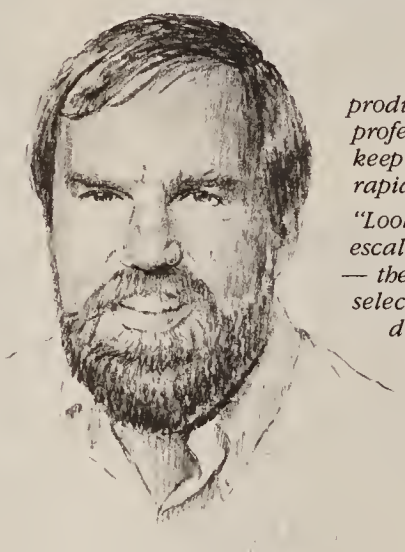

Stephen Kukoy is not only President of National Computer Associates but also President of Abacus Consultants, Inc. in Denver. Having been in the recruitment business for nearly 15 years, he knows the critical role advertising plays in finding the best qualified professionals. He also knows where his recruitment advertising dollars are best spent.

Founded in 1971, National Computer Associates (NCA) is an exclusive group of private firms dedicated to importing and exporting computer personnel on a national basis. With an active membership of 32 firms throughout the United States and Australia, NCA is virtually a network of "branch offices" working together to place the best qualified IS professionals in the right jobs. Today, NCA's aggressive growth and strategic market positioning make recruitment advertising more important than ever.

"Since Computerworld *is the most respected professional newspaper for computer professionals, we believe it's our most direct means for reaching our entire target audience — programmers, systems analysts, and IS directors . . . operations, technical support, telecommunications, and PC professionals . . . even vice presidents and presidents. And with its national reach,* Computerworld *is the perfect place to tell these IS professionals about how NCA, with its pooled resources and industry expertise, offers them a wider variety of jobs in more companies in just about every location.*

"Because of our long-term recruitment success, we place 100% of our national media advertising in one publication. Computerworld. *Time after time,* Computerworld *produces top-calibre candidates — qualified professionals who are truly interested in keeping their careers abreast of the industry's rapid changes and trends.*

"Looking ahead, we expect several factors to escalate our recruitment advertising needs — the growing demand by clients for greater selectivity, an increasingly specialized industry, a continually mobile marketplace, and NCA's current plan to select an affiliate in the lucrative European marketplace. As this all happens, we intend to increase our advertising budget in Computerworld *proportionately.*

"Computerworld *recruitment advertising has been equally successful for Abacus Consultants. Although we've experienced many such situations, one specific instance comes to mind. After local advertising proved unsuccessful for finding a particularly hard-to-find individual in the Denver area, the client gave us the go-ahead to advertise nationally. We ran one recruitment advertisement in* Computerworld *— and got an instant response from just the candidate we were looking for — right here in our local area. It just goes to show that* Computerworld *delivers far better candidates than any other source."*

Computerworld. We're helping serious employers and qualified information systems, communications, and PC professionals get together in the computer community. Every week. Just ask Stephen Kukoy. For all the facts on how *Computerworld* can put you in touch with qualified personnel, call your local *Computerworld* Recruitment Advertising Representative today.

COMPUTERWORLD

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An IDG Communications Newspaper

PRODUCT REVIEW

Sapiens almost hits the mark

Sapiens International

This is the seventh in a monthly series of performance benchmarks that for the next several months will focus on the integration of computer-aided software engineering (CASE) and fourth-generation language (4GL) products. The benchmarks are monitored by an independent team headed by David Whiteside, managing director of Computing Futures Ltd. and his associate, Prof. Eberhard Rudolph, formerly of the University of Auckland, for exclusive publication in Computerworld.

Each product is observed in action over a three-day period during which a vendor team solves the case study project costing system, an application that is familiar to most information systems professionals. The team's mission is to demonstrate the capability of the major CASE/4GL environments to deliver complete and complex business solutions under "live fire" conditions. In this issue, we look at Sapiens, a rule-based, object-oriented development tool from Sapiens International.

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Building on artificial intelligence technology, Sapiens, a relatively unknown product, is one of the few mainframe application generators participating in IBM's AD/Cycle.

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Carried out in London, the team of two people provided a solution that fell short in a number of areas. Some of the shortcomings were cosmetic while others came from the team cutting corners to avoid a lower level time-consuming approach. While the final solution exceeded the requirements in several areas, the system still contained some bugs. We gave a rating of "good" for the level of completion.

•

The team completed the benchmark and its enhancement in 14 working hours with an overall effort of 24 hours. Such a development speed was remarkable. It was achieved partly because of a shrewd approach to use of time and compromises in the solution. Nevertheless, the power of the tool was the predominant factor and justified a "very good" development speed rating.

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The power of the rule-based approach was even more evident in the enhancement section, where the team was able to change 40% of the system in just one hour and 40 minutes. This time the team cut no corners and delivered without compromise. A grade of "excellent" was more than justified for speed of maintenance.

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The documentation provided was straightforward, listing data elements with associated processing rules. The higher level CASE documentation was presented in a pleasant graphic format but used an unusual notation, even unfamiliar to the chief developer. A comprehensive, on-line cross-reference facility keeps track of the use of each data element throughout the entire system. We awarded a rating of "very good" for documentation.

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The Object-Modeller CASE tool directly created data structures in the single data dictionary. Being an early version of the CASE tool, it was limited to simple object relationships. The tools are currently fully integrated in a one-way direction (top-down). We rated the level of integration as "good."

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The end-user language, Quix, was very efficient and produced excellent results with very little effort in merely 10 minutes. The language was given a rating of "very good."

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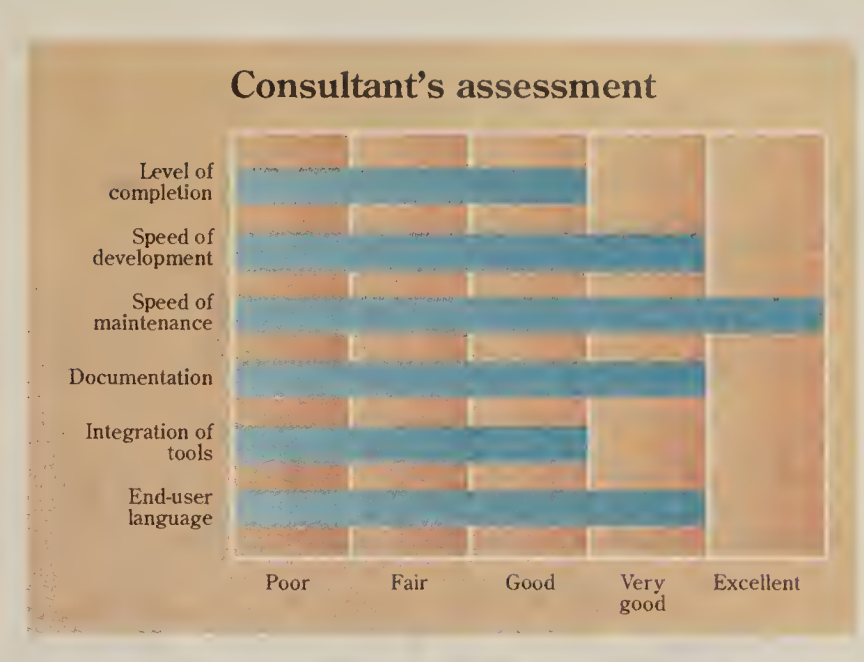
In summary, Sapiens is a refreshing product. It merges AI principles with current CASE and database technologies and produces a highly flexible and productive environment. Its particular strength lies in maintenance.

As with any new approach there are initial problems. For Sapiens to reach full potential, the CASE tool will have to leapfrog current CASE technology to incorporate rule-based development. If Sapiens can achieve this, it will become a product to be watched.

The Sapiens tool kit

- Object-Modeller — CASE tool
- Sapiens — Development platform including a knowledge base
- Quix — Query language
- Perfect — PC/3270 emulation mainframe link



Development and maintenance report card

ANALYSIS AND DESIGN: D
The CASE support of the analysis and design was limited to defining objects and their relationships. No business rules were supported at this level, yet Sapiens relies heavily on general rules. The early version of the tool was unable to represent some objects and relationships of the complex transaction.
STRENGTH: Graphics are well presented.
WEAKNESS: Design is only partial.

DATABASE SETUP: B
This stage took slightly longer than usual because a large number of the data constraints were defined as general rules. All data is referred to by a unique number, currently restricting a database to 10,000 items.
STRENGTH: Edit checks are implemented at a global level.
WEAKNESS: Data has to be defined at two levels.

FILE MAINTENANCE TRANSACTIONS: B
The requirement of being able to update multiple files from multiple processes proved to be difficult to implement in an object rule-based environment. One-to-one relationships were implemented "on the fly."
STRENGTH: Most of the work is done by general rules.
WEAKNESS: Results can be unpredictable.

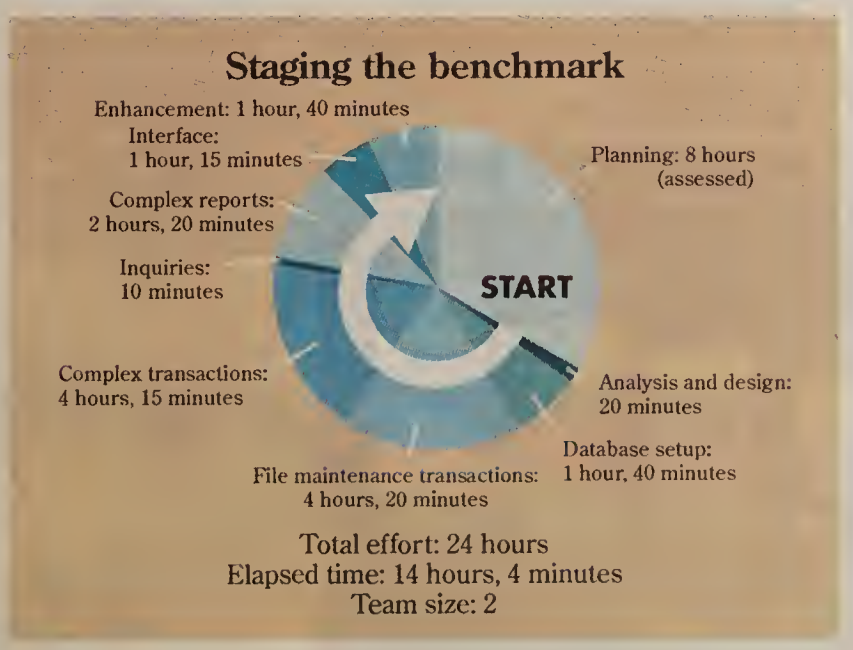
COMPLEX TRANSACTIONS: C
The complex screen format and connections to the database were easily generated. As in many other cases, the time arithmetic required special handling and proved cumbersome. Special control fields were needed to navigate between different screen sections.
STRENGTH: The results can be incrementally refined.
WEAKNESS: Display fields cannot be concatenated.

INQUIRIES: A
The Quix query language generated the solutions with a few simple lines. While end users could write such code, they also had to be familiar with the data structure, including the awkward time representation.
STRENGTH: It is very fast.
WEAKNESS: No weaknesses are evident.

COMPLEX REPORTS: D
The standard report generator could not produce the "two-up" presentation called for in the requirements. The team refused to drop to its lower level 4GL Cobol generator, thus compromising "level of completion" for "speed of development." The report was generated from intermediate data and did not reflect the exact state of the files.
STRENGTH: It is good for straightforward reports.
WEAKNESS: Data duplication may be required.

INTERFACE: B
A manual conversion of the Ashton-Tate Corp. Dbase file was needed to include a control data item to each record. Once this was completed, the general rules already in place for the complex transaction were used to validate the external data.
STRENGTH: Reusable code is supported.
WEAKNESS: Dbase file layout has to be modified.

ENHANCEMENT: A
The selected enhancement required changes in the data structure, interface structure, screen layout and reports. Here, the rule-based global approach to program logic showed its full strength, producing the best result so far.
STRENGTH: Change is encouraged with the environment.
WEAKNESS: Changes are not automatically reflected in the design documentation.



The solution was initially developed on a single (due to resource constraints, not design constraints) Intel Corp. 80386-based DOS workstation connected via the Perfect 3270 emulator to an IBM 4361 mainframe running under VM/CMS.

Details of the product are available from Sapiens USA, 295 7th Ave., New York, N.Y., 10001, (212) 366-9394.

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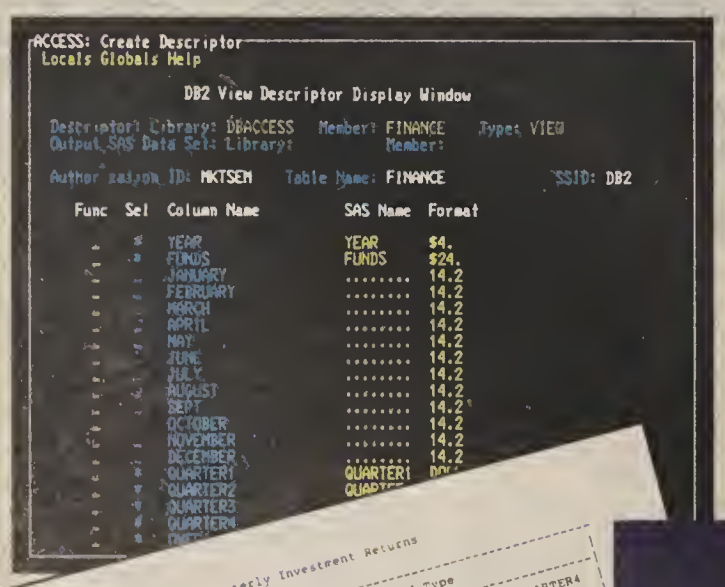


SYSTEM 2000®

Users eye Businessland plan

BY RICHARD PASTORE
CW STAFF

ATLANTA — Struggling Businessland, Inc. garnered votes of confidence from customers earlier this month at its two-day technology summit. The personal computer dealer also described a restructured strategy that it said will pay off by providing for more efficient service and competitive prices.

Despite the financial beating Businessland has taken in the past 12 months, major customers attending the summit described their relationship with guarded satisfaction.

"I haven't seen any cutback in what they do for me," said Michael Esposito, manager of advanced technology systems at Federal Express Corp. The courier buys hardware, software and some PC support services from Businessland.

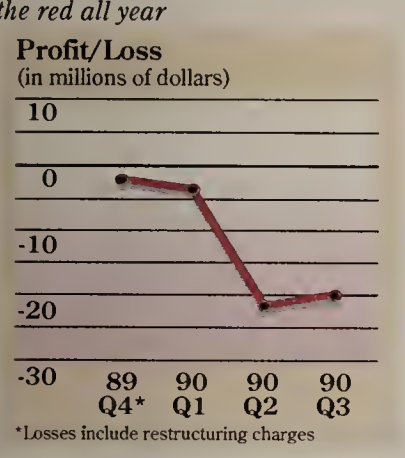
"I haven't seen [Businessland's problems] reflecting on our business relationship," added George Billings, manager of network computing services at Pitney Bowes, Inc. in Shelton, Conn.

Several Businessland clients, while saying they are happy with the dealer, added that they would not be overly inconvenienced should the company give up the ghost. "What we are buying from Businessland is talent," said Irene Stecher, manager of production management at Grand Metropolitan PLC. Grand Metropolitan's Pillsbury Corp. subsidiary contracts for on-site network support from 18 Businessland employees.

"If something was to happen to Businessland, I have every confidence that we could arrange something like a transfer for these people," Stecher said.

Deteriorating picture

Businessland's results have been in the red all year



Source: Businessland, Inc. CW Chart: Paul Mock

No problem

Federal Express is also not worried. "We're not so strategically aligned — whatever happens [to Businessland] won't hurt us," Esposito said.

Other users are not as blase about Businessland's fortunes. "Our decision to go with Businessland was made before the problems with their indicators," said P. J. Gottardi, manager of information services at Phillips Petroleum Co., which has a long-term hardware contract.

Gottardi said he is happy with Businessland, but "I look at their difficulties now, and I hope they're temporary," he said.

Early 1991 is Businessland's goal for restored profitability, and management is counting on a new operating structure to help reach this target.

At the same time, the new operating groups are intended to speed up delivery, enhance technical expertise and keep prices competitive, according to Leslie McNeill, vice president of strategic planning at Businessland and the architect of the new structure.

While all of the dealer's services were once driven by its single sales division, Businessland broke its operation into four independent segments late last month. The General Products Division will handle commodity sales. Network Systems will offer network installation and integration services and large-scale vertical applications. The Service Division will support desktop hardware. The last group, Distribution, will handle internal shipping and warehousing.

With the segmentation, "customers will see more efficient delivery of product, and the availability will improve," McNeill said. For example, Businessland now offers Quickship, a toll-free PC-order line with a 24-hour turnaround. A more focused concentration on the service segment will achieve the goals of 85% spare parts availability and an 85% rate for first-visit fixes, McNeill said.

While he is satisfied with current service levels, Billings said the segmentation could lead to improvements. "With this differentiation, I would think you would get better service because people could specialize and not be spread too thin," he said.

Businessland's segmented focus will also reduce overhead, which in turn should lead to more competitive prices for customers, McNeill added. However, with service now officially separated from sales for the first time, the days of free support are finally over, he said.

"No one segment will subsidize another," McNeill said. "We have to make a profit."

Si, this word processor is bilingual

BY JAMES DALY
CW STAFF

SANTA CRUZ, Calif. — A small start-up software house has created a bilingual English/Spanish word processing program that is intended to offer dramatic benefits for firms in places where a large Hispanic population resides.

Westcliff Software, Inc.'s Dos Amigos program, or "two friends" in Spanish, allows users to work in English, Spanish or both at the same time, thus allowing computer access to a heretofore untapped labor pool, company officials said. The program creates, edits and checks the spelling in a document in both languages and comes with a bilingual dictionary of more than 291,000 words.

Dos Amigos, which has been enthusiastically received by the Hispanic Chambers of Commerce, was designed by a pair of former Borland International, Inc. developers who said a burgeoning market was largely overlooked.

"Hispanics are one of the fastest growing population segments in America, yet somehow the computer industry has failed to recognize this," President Mark Andrews said. He and Executive Vice President Jim Moody estimated that there are more than 900,000 Hispanics working in the San Francisco Bay Area alone.

Choice of default

The user chooses English or Spanish as the default that appears on the screen when the program is started, but second-language interpretations of all aspects of the product are available: menus, Help screens, manuals and software tools.

While Dos Amigos is not a translator, single-word translation duties can be performed, Andrews said. For example, if a user wanted to interpret "powerful" into Spanish, he would press a key and the words "poderoso" and "fuerte" would be presented. The user would then insert the chosen word. Westcliff officials admitted that cultural and linguistic nuances make it nearly impossible to develop a 100% accurate automatic translation program but said they are moving in that direction.

The application allows the user to do mail merges, print and share files with other personal computers.

The suggested retail price of Dos Amigos is $149, but Westcliff officials said they are offering the program at an introductory price of $124.50.

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Dutch growers use IS to fight battle of the blotch

ON SITE

BY SALLY CUSACK
CW STAFF

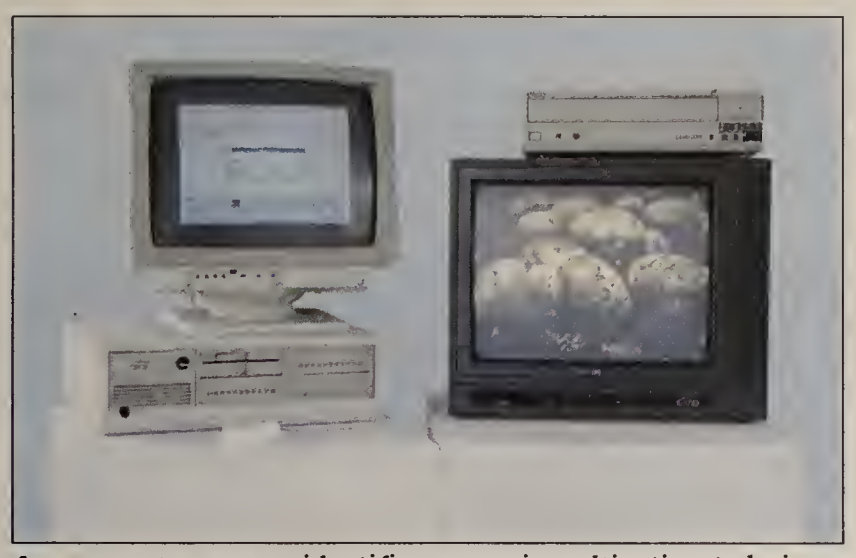
HORST, The Netherlands — Next time you eat a mushroom, consider bacterial blotch. No, it is not some weird type of skin disorder you develop from consuming mushrooms. Bacterial blotch appears as dark spots on the cap of a mushroom, and a bad case of it can be devasting to a mushroom grower.

The mushroom industry provides Holland with $175 million per year, and the country has enlisted the aid of expert system software to help win the ongoing battle of the blotch.

Leo Van Griensven started building an expert system in 1987 at the Mushroom Experimental Station, a government institution that is financed by both the growers and the government. Together with Joost Backus, a knowledge engineer and systems builder, Van Griensven has developed an easy-to-use system to guide mushroom growers through the threat of pests and disease during the cultivation process.

The duo relied on the Knowledge Engineering System from Software A & E in Arlington, Va., as the basis of its agricultural aid program. The Knowledge Engineering System communicates to the end user by means of text, hypertext and Sony Corp. Laservision images. The Dutch are currently running the program on an OS/2-based Compaq Computer Corp. 386/25 machine.

Because there is no cure for bacterial blotch, which occurs when there have been errors in cultivation and climate control, the expert system tries to identify problems in the cultivation process or faults in the climate control equipment.



An expert system *identifies errors in cultivation techniques and climate control that cause bacterial blotches on mushrooms*

Once the question-and-answer criteria is satisfied, the system gives the grower advice on bacterial blotch prevention.

Through an embedding technique, the user interface has been enhanced to allow the user to respond by clicking on "active words" in the dialogue window. The information is displayed on a television monitor next to the computer screen, and data is stored on a Laservision disk.

One of the main requirements when developing the system was that it be easy to use, Van Griensven said. In this case, end users will be growers and farmers, and for many of them, this will be their first experience with a personal computer, he added.

"We have 850 small growers out there, and because they are small, they need the extension service an expert system can provide," Van Griensven said. Using the software, the grower can enter the system during cultivation for advice on pests and diseases as well as general agricultural information.

There are no actual users yet; the developers said they anticipate "going live" by year's end. Because the project runs under no profit margin, hard numbers are unavailable as to the cost of the system to the end user. However, Van Griensven noted that it is "not very expensive."

Observers say fast CD-ROM 'not a big deal'

BY CAROL HILDEBRAND
CW STAFF

Hitachi Sales Corporation of America may make it into the record books with its new compact disc/read-only memory (CD-ROM) drive, which it said is the world's fastest, but industry observers are not exactly overwhelmed by the feat.

"It's nice; they had to work hard to do it, but so what?" said John Hartigan, principal consultant at Optiview Consultants.

The CDR-1700S sports an access time — the amount of time it takes to get from one segment of data to another on a CD-ROM — of less than 340 msec. According to Linda Helgerson, editor of "CD-ROM End User," that is about 10 msec faster than the previous record. "In terms of speed, it isn't a big difference," she said.

Hartigan agreed. "Anytime you speed [drives] up, you want to brag about it, but I just don't think that it's that big a deal."

CD-ROM drives, which have average access times of approximately 400 msec, suffer from a reputation for being slow, but just how slow is a relative matter, Hartigan said.

"Three hundred and forty msec is not a long time: It's less than half a second. If you've got an encyclopedia application and you're looking up references in it, 340 msec isn't going to bother you," Hartigan said.

The CDR-1700S also features several safeguards that help eliminate reliability problems caused by dust and other contaminants. The unit is compatible with IBM Personal Computers, Personal System/2s and compatibles and retails for $995.

Maximo a hit with users

BY CAROL HILDEBRAND
CW STAFF

Millwrights and electricians are not generally the types that get excited about the latest technological bells and whistles. But Maximo Series 3 maintenance management software from Cambridge, Mass.-based Project Software and Development, Inc., may have them waving their wrenches.

"People just won't believe you when you say you've got maintenance people excited about a computer package, but they were," said Glenn Coogan, West Coast-area engineer at beta-test user Ocean Spray Cranberries, Inc. in Markum, Wash. Ocean Spray uses Maximo, which tracks equipment maintenance, repair and other tasks. The six facilities nationwide average five to 10 networked workstations each.

Maximo uses Microsoft Corp.'s Windows 3.0 as a front end and Gupta Technologies, Inc.'s Sqlbase relational database. User reaction to both was positive. Series 3 is the follow-on to Maximo Maintenance System, which is in place at more than 400 firms worldwide.

"When I first saw the new Maximo screen it looked a little hokey, but the more I played with it, the more excited I got," Coogan said. He added that the only downside to Series 3 was the memory requirements. "But that's a Windows problem, not a Maximo problem."

John Curry, the technical maintenance manager at Hewlett-Packard Co. in Corvallis, Ore., said he expected the relational abilities to save him a lot of time. Currently, to charge out labor and materials for a work order, Curry uploads all information, such as charge numbers and verifications of signature authorization, to an HP 3000, which then analyzes the data and sends error reports if an item is not keyed in correctly. With Sqlbase, "We should be able to tell whether our information is good when we type it in in the first place," Curry said.

Pricing starts at $14,480, and Maximo Maintenance System users can upgrade at no charge.

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4th Dimension: Speed and ease of use even better

Technology Analysis — a roundup of expert opinion about new products. Summaries written by Computerworld *free-lancer Suzanne Weixel.*

Acius, Inc.'s 4th Dimension relational database management system package, a powerful development tool for the Apple Computer, Inc. Macintosh, is now even better, according to personal computer reviewers. Version 2 offers improved performance and ease of use, the reviewers say.

Ease of use: Like Version 1, Version 2 features a high-quality interface and design environment. Unlike Version 1, however, many common database operations are now built-in.

Overall performance: Although 4th Dimension has increased speed, the package still generates large files and reads and writes to disk often during operations, so a large, fast hard disk and a lot of memory are recommended.

Data management: 4th Dimension ensures that all the steps in a group of data operations are completed before it executes.

Reporting: The product's interactive symbolic debugger and built-in commands allow nonprogramming users to turn out elegant applications.

Macintosh compatibility: Ready-to-use buttons and other features can be implemented by standard Macintosh interface options.

At $795, the package is not cheap, and it requires at least a Macintosh Plus with a hard drive. But for the money, 4th Dimension Version 2 brings the power of a high-end database to the Macintosh and makes database capabilities more accessible than ever.

Reviews Summary

Criteria	PC Week 5/22/90	Mac User 2/90	Mac World 3/90
Ease of use	8	Easier than ever to use	Simpler to use than previous version
Overall performance	8	Powerful, fast	Faster, most operations done without programming
Data management	8	Improved file handling	NC
Reporting	9	New standard layout, better record treatment	Powerful and flexible applications generator
Macintosh compatibility	9	NC	Deviates from Macintosh guidelines
Reviewer's score	8.4*	The best gets better	Excellent choice provided you have enough power

**Ratings are based on a weighted scale of 1 to 10 where 10 is excellent. Only* PC Week *rating is included in the score chart (right). NC: No comment. These are excerpts from the reviews. Refer to actual articles for details.*

RATINGS

- Users: John Heckendorn, University of California (*performance:* 8, *cost:* 9); David Chennault, Randy Farmer, Mcdonnell Douglas (8,7)
- Analysts: Michael Masterson, Masterson Consulting (5,4); Richard E. Meyeroff, Meyeroff Computer Consultants (7,7) "Version 2 is more accessible to end users, albeit power end users." Meyeroff said.
- Financial: 4th Dimension has a 65% share of the Macintosh database system market with an installed base of more than 150,000 users, according to the company. It is distributed by Acius, Inc., a subsidiary of ACI France.

4th Dimension

score: 63

(Maximum score: 85)

Points (maximum)	Category
25 (30)	Published reviews
12 (20)	Analysts' ratings
12 (15)	Users' ratings
14 (20)	Cost evaluation

(See financial information below)

Acius responds

Comments from Mark Vernon, vice president of sales and marketing:

Overall performance: In Version 2.1.1, we tweaked performance for the low end.

Data management: In Version 1, you could delete fields and files, but people were deleting data. Now they can't do that.

Mac compatibility: We want to be consistent with the Macintosh user interface guidelines, but we won't limit functionality.

Double Helix: More controls improve features

Double Helix

score: 66

(Maximum score: 85)

Points (maximum)	Category
24 (30)	Published reviews
14 (20)	Analysts' ratings
14 (15)	Users' ratings
14 (20)	Cost evaluation

(See financial information below)

Reviews Summary

Criteria	PC Week 5/22/90	Mac User 2/90	Mac World 3/90
Ease of use	8	New viewing modes make use even easier	Easy to modify
Overall performance	7	Significantly improved	Pretty languid but improved
Data management	8	NC	Good, icon-based
Reporting	8	Improved selection features	Good step-by-step application guides
Macintosh compatibility	9	NC	NC
Reviewer's score	8.0*	A good choice	Best bet for nonprogrammers

**Ratings are based on a weighted scale of 1 to 10 where 10 is excellent. Only* PC Week *rating is included in the score chart (left). NC: No comment. These are excerpts from the reviews. Refer to actual articles for details.*

RATINGS

- Users: Ron Anderson, manager of video production at Federal Express Corp. (*performance:* 9, *cost:* 8); Bob Antley, Antley Business Systems, Inc. (10,8). "The number one key is its ease of use. It's a very complicated, sophisticated database that's easy to use," Anderson said.
- Analysts: Michael Masterson, Masterson Consulting (6,5); Richard E. Meyeroff, Meyeroff Computer Consultants (8,8).
- Financial: With more than 50,000 installations, Double Helix is produced by Odesta Corp., which has only 150 employees. Double Helix has a 40% share of the Macintosh relational database management system market.

Odesta responds

Comments from Julie Lyons, product manager:

Ease of use: We offer programmers three features: developing for a client/server multiuser environment, a fast, flexible method and VAX portability.

Performance: This is one of the fastest multiuser [database management systems] running on a Mac.

Reporting: A pop-up list of choices will be included in the next upgrade.

Odesta Corp.'s Double Helix takes the unique approach of using object-oriented icons for data management and applications development. The current upgrade from Double Helix II to Version 3 has increased the program's speed and power, according to personal computer reviewers.

Ease of use: Version 3's icon-based approach makes it easy to modify databases, and there are built-in controls to ensure that icons cannot be connected to create incorrect syntax.

Overall performance: Helix's free-form style of database management imposes structural overhead that slows the system down when building an index, *Macworld* said.

Data management: Special icons or dialog boxes perform key functions that usually require procedural programming.

Reporting: New to Version 3 is a concession to procedural control — an icon that can hold a sequence of Helix views, eliminating the need to step manually through a series of procedures.

Macintosh compatibility: The icon building-block approach is combined with a visual interface and comprehensive documentation that makes the program particularly appealing to novice users who are accustomed to the Macintosh environment.

Double Helix 3.0 costs $595 and requires a Macintosh Plus with 1M byte of random-access memory and a hard disk. It can be very useful for midsize databases that need to be modified frequently, and it offers one feature that no other Macintosh database system has: It can be used to develop applications for a VAX.

Methodology: *Published reviews: average of available scores from published reviews multiplied by 3. Analysts' ratings: average of 1-to-10 rating (1 is poor, 10 is excellent) from product analysts multiplied by 2. Users' ratings: average of 1-to-10 rating multiplied by 1.5. Cost evaluation: average of both groups' ratings of the cost to get a product up and running multiplied by 2. Financials: No financial ratings are included because the vendors do not release financial data. This is reflected in a reduction of the overall score from 100 to 85.*

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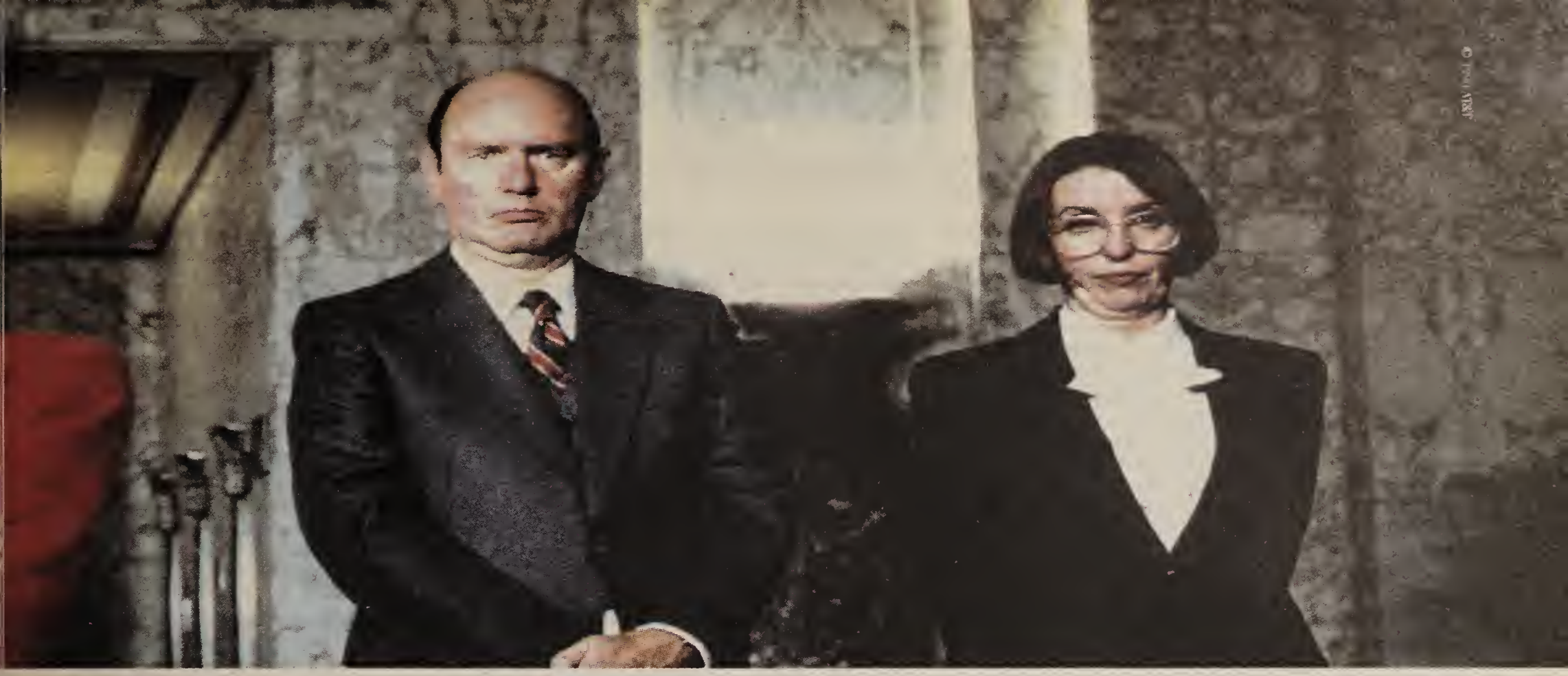

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Focus on multimedia standard

BY MAURA J. HARRINGTON
CW STAFF

A compact disc version of an encyclopedia defines the location of Tibet with a video presentation of the country. A teach-yourself foreign language program aids users with pronunciation by asking them to speak into the personal computer. These are just two small examples of the potential of multimedia technology.

A growing number of companies are announcing hardware products to run these new multimedia software products — niche market applications focusing on the fields of education, corporate training, marketing and publishing.

Products introduced at the recent Microsoft Multimedia Developers Conference [CW, Dec. 3] and scheduled to ship in volume by mid-1991 include audio boards, multimedia computer chips and fully equipped multimedia PCs with compact disc/read-only memory (CD-ROM) drives.

While there are already some companies with multimedia-based products that offer similar multimedia capabilities, Microsoft Corp.'s recent introduction of its Multimedia Developers Kit, which lays down standard specifications for multimedia hardware and software products, is the push that has been needed to get some of the larger computer companies to stand behind emerging multimedia technology, according to industry analysts.

Price break coming

Nick Arnett, editor of "The Multimedia Report," based in Santa Clara, Calif., said the fact that hardware and semiconductor companies are taking such an interest in multimedia technology will help to bring about a break in the price barrier that can sometimes prevent a new technology or product from gaining widespread support in the marketplace.

Companies such as AT&T's Computer Systems Division, Headland Technology, Inc. (formerly Video Seven), Tandy Corp., Fujitsu Ltd. and NEC Technologies, Inc. announced that they have supported Microsoft's standard and that they will develop multimedia products for shipment in "early 1991" under the software giant's new Multimedia specifications.

Boxboro, Mass.-based NEC said that next spring, it will introduce a full multimedia PC product line from the Intel Corp. 80386SX-level microprocessor on up, which is to include "at least 4M bytes of random-access memory," a CD-ROM drive and audio, graphics, text, motion and still video capabilities, according to Marc Miller, director of strategic planning at NEC's multimedia division.

Affordable systems

Tandy is scheduled to ship software development systems for affordable PC-based multimedia systems based on the company's 4025 LX computer, which includes a 25-MHz Intel 80386 microprocessor, according to the company.

The system — and others conforming to its specifications — will also include at least 2M bytes of RAM, a CD-ROM drive, a 30M-byte hard drive, a 1.44M-byte 3.5-in. floppy drive and video and sound capabilities for multimedia developers. Tandy's system is scheduled for delivery to customers "sometime in 1991," the vendor said.

AT&T supported Microsoft's announcement and committed to integrating multimedia capabilities into its Rhapsody Business computer product line.

Tokyo-based Fujitsu said it will also market multimedia products based on Microsoft's multimedia version of Windows, announced on the same day that the Multimedia Developers Kit was released at the developers conference.

Combo package

Headland Technology said it is developing a multimedia computer board and CD-ROM drive combination package. It is scheduled to be available to users next spring for less than $1,400, according to Jim Anderson, Headland's director of strategic marketing for the company's graphics products.

However, while acknowledging that the hardware products help to drive the multimedia technology down to an affordable level , analysts were careful to note that Microsoft's announcement is still one of the first steps for the new technology.

Software applications for the general consumer market, analysts said, are still at least three years away.

A personal computer sets out to sea

BY GARY H. ANTHES
CW STAFF

BILOXI, Miss. — It was far and away the biggest catch of tuna that Tam Trinh had ever landed. The Vietnamese fisherman had just completed his first day with an experimental, personal computer-based system, and his boat, Princess Sabrina, returned to port riding low in the water with the results.

The system was supplied by the Mississippi Department of Economic and Community Development and was built in part from software developed by the National Aeronautics and Space Administration for computing water-temperature contours from satellite data. The National Marine Fisheries Service added features to display water depth and submerged obstacles, and the state agency added rules specifying the behavioral characteristics of 12 species of fish that live in the Gulf of Mexico. The system pinpoints on a map display those areas where fish are most likely to be found, and its water-temperature database can be updated as often as every 52 minutes.

Trinh was one of four fisherman chosen to test the system. The night after the installation of the PC, cellular telephone and antenna, he slept with the system on the boat, said David P. DeBlanc, programs coordinator for the Mississippi Technology Transfer office at the Stennis Space Center. But then Trinh started carrying the gear home with him each evening. "The word got out that the government had put some super-sophisticated equipment on his boat. He was worried someone would slit his throat," DeBlanc said.

DeBlanc said Trinh was trained to use the system the first day out on the job, a process that took about 20 minutes over the cellular telephone.

One day, the Technology Transfer Office received a call from Trinh. The computer would not boot. When technicians discovered screws missing from the computer's case and loose parts inside, Trinh admitted he had been exploring the machine's innards. "He told us he was 'looking for the magic,' " DeBlanc said.

Works too well?

DeBlanc said the system works so well that it has been criticized by environmental groups, who fear it may lead to depletion of the less common fish species.

The software will be licensed to Gulf Weather Corp., a Mississippi start-up based at Stennis. The company will license the software and sell monthly dial-up or radio access to the satellite data, which is available for all of the world's oceans, President Frank Schatzle said.

Schatzle said Gulf Weather will expand the service along the Texas and Florida coasts, then up the East and West Coasts of the U.S. Eventually, the company will seek to license the system to overseas companies for use around the world.

Schatzle said data about additional species of fish will be added, and the software will be upgraded periodically based on fish-catch history from the National Marine Fisheries Service.

The system is written in Fortran for PCs based on an Intel Corp. 80286 chip as well as with IBM Video Graphics Array graphics and a hard disk.

Sun gets backing for commercial software

Six firms develop packages to enhance Sun's accounting software

BY J. A. SAVAGE
CW STAFF

Driving to get Unix accepted in commercial markets, Sun Microsystems, Inc. recently announced that six developers have produced versions of corporate accounting and business management software packages for Sun platforms.

The new products are large software systems with several modules for functions such as accounts payable and receivable, and general ledger.

"We're not going specifically into the accounting business, but accounting is a fundamental piece to get into the general business market," said Bob DeLaney, manager of market development for business markets at Sun.

Variety of products

Products are currently available for Sun's Sparcstation platforms from State of the Art, Inc. in Irvine, Calif., in its M.A.S. 90 Evolution/2; from Armor Systems, Inc., in Maintland, Fla., in its Premier package; from Fourgen Software, Inc. in Edmonds, Wash., with its Fourgen Accounting System and from Oracle Systems Corp. with its Oracle Financials.

Expected in the first half of 1991 are two more packages: a Database Accounting Library from SBT Corp. in Sausalito, Calif., and Classic package from MCBA, Inc. in Glendale, Calif.

Combined, the software vendors have an installed based of more than 200,000, and Sun hopes that if those users migrate to the Unix operating system, Sun will get their hardware business, according to the company.

Apple offers protocols for terminal services

BY JAMES DALY
CW STAFF

CUPERTINO, Calif. — Apple Computer, Inc. moved to encourage a range of multivendor connectivity options last week by announcing that it will license its Apple Terminal Services (ATS) protocols to third-party developers and corporate IS departments.

ATS protocols are designed to allow a developer to create mainframe or minicomputer programs that display and retrieve information on remote personal computers and allow the host to play the role of a local desktop application.

The protocols are currently available on Apple's Macworkstation, a server application that provides a Macintosh interface as well as printing and filing services to client applications running on remote computers.

With the license, developers can create PC software for IBM PCs and compatibles. The software retrieves the ATS commands from a mainframe and displays the information on the PC's screen.

The license will also allow software to be developed to display mainframe information on Unix-based workstations.

Only on Macs before

Prior to the announcement, the ATS protocols could be used only on Macintosh computers.

Using ATS protocols, a developer could create, for example, a hotel reservation system in which a central mainframe could be accessed by hotel clerks using a variety of PC models in various remote sites.

Apple officials also announced two early third-party licensees: United Data Corp. in San Francisco, which sells software for IBM PCs and compatibles, and Integrated Solutions, Inc. in King of Prussia, Pa., a vendor of Unix software.

OSI groups tackle user issues

Organizations are encouraged to raise the awareness of OSI

BY ELISABETH HORWITT
CW STAFF

Now that the various flavors of the Open Systems Interconnect (OSI) standard have achieved a certain level of technical viability, consistency and stability, standards bodies are converging on the two remaining obstacles to widespread deployment of such protocols: lack of compliance testing and user resistance.

At a recent meeting of the North American MAP/TOP Users Group, Laurie Bride, manager of network architecture at Boeing Computer Services Co., called for raising users' OSI consciousness all the way up to the chief executive officer level.

ADDRESSING USER barriers to implementation of standards is a goal of the Users Alliance for Open Systems.

"A lot of our efforts now are in getting vendors to build products and users to start implementing them," said Michael Kaminski, manager of computer integrated manufacturing/networking at General Motors Corp. and a member of the MAP/TOP Users Group. "At GM, a lot of my people who in the past had mostly been doing development are now focused more on implementing."

Indeed, most Manufacturing Automation Protocol (MAP) supporters in the user community today have shifted focus from getting the standard technically workable to "making things happen in their various environments," Kaminski noted. "The MAP [3.0] specification was finalized in 1988; we had products by mid-1989. It took until the middle of 1990 to get the first implementations going. That's where we are now," he added.

The North American MAP/TOP Users Group plans this spring to "come out with an extension that will add functionality" to MAP 3.0 and Technical Office Protocol 3.0 while preserving compatibility with existing MAP and TOP products, Kaminski said.

Addressing user barriers to implementation of standards — "not just for open communications, but also open user interfaces, databases and operating systems" — is one of the main raisons d'etre for the Users Alliance for Open Systems, according to Kaminski, a member. Such barriers "exist within any type of organization because a lot of times you don't have a good business case" for standards deployment, Kaminski added.

Open systems are "thought of more as an appendage that maybe helps, maybe doesn't help" the organization's bottom line and key competitive strategies, Kaminski said. Another common barrier is information systems departments' frequent inability to sell top management on the idea, "because maybe the 'high priest' of computers doesn't talk the same language" as business executives, he said.

The Users Alliance last week announced that it has finalized a relationship with the Corporation for Open Systems (COS) as a more effective and formalized way of communicating its priorities to the various user and vendor standards organizations, Kaminski said. The MAP/TOP Users' Group is already part of the COS umbrella; in addition, the Users Alliance hopes to use COS as a pipeline to such standards organizations as X/Open Ltd., the OSI Network Management Forum and the Open Systems Foundation, he added.

GM's Kaminski *says his group has shifted focus from development to implementing new products*

"We have the makings of an umbrella group, which could be the U.S. equivalent of what goes on in Japan and in Europe," in terms of establishing "a requirements definition and product direction that are focused around the requirements of users" as opposed to developing and implementing standards "in a more or less haphazard fashion," Kaminski said.

Another user group that is making more use of the COS' resources is the National Institute for Standards and Technology (NIST), which coordinates standards definition and implementation for the U.S. government.

The COS announced recently that NIST has provisionally registered its test center to conduct testing to determine whether products comply with several Government Open Systems Interconnect Profile specifications, including X.400, X.25, transport, File Transfer, Access and Management (FTAM) and 802.3.

The COS also recently announced that it has issued a request for information, looking for tools that can be used to expand its COS Mark conformance testing program to include additional OSI protocols, according to COS spokesman Eric Bolton.

The protocols to be added include: X.400 (1988 version), CCITT X.500 directory services, additional FTAM functionality and OSI network management protocols, the standards body said. The COS co-develops and sponsors the development of conformance test tools, which it makes available to its members, Bolton said.

Budget cutbacks will spare some markets

BY JOANIE M. WEXLER
CW STAFF

Though the growth rate of corporate networking budgets is tumbling in tandem with overall information systems investments, there is fertile spending ground for equipment and services providing companies with quick paybacks, bottom-line business benefits or both.

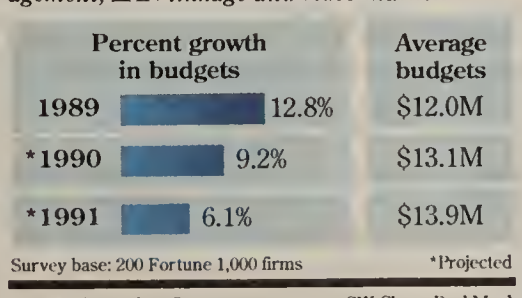
According to Boston-based research firm The Yankee Group, markets that will enjoy the highest compound annual growth rate through 1991 will be enterprisewide network management (48%), local-area network interconnection (42%) and video equipment and services (40%).

One reason these markets will spiral is that they are still fairly untapped and have a long way to go before becoming saturated. However, users also flag these areas as either requiring relatively low investments in relation to their payback potential or as too tightly linked to business goals for companies to survive without them.

For example, John Faccibene, vice president of telecommunications at New York-based brokerage firm Garban Ltd., recently implemented a LAN in his firm's San Francisco office. Faccibene purchased gateways and bridges to interconnect the San Francisco LAN with his New York LAN over an existing T1 backbone network "as a cost-effective way to extend our trading-desk application."

Bare-bones budgets

The declining growth rate in the average communications budget parallels that of overall IS, though fertile ground exists in network management, LAN linkage and video markets



Source: The Yankee Group — CW Chart: Paul Mock

Faccibene explained that the interconnection equipment was less costly than building a separate real-time central processor for the San Francisco site. "LAN interconnection is one of our biggest growth areas," said Howard Hunter, corporate manager of telecommunications in the Tulsa, Okla., office of Los Angeles-based Occidental Petroleum Corp. "We're now implementing the first in a series of six or seven capital investments aimed at linking 50 to 75 LANs in the U.S."

He explained that the investment is necessary to his business to allow remote sites to communicate with corporate headquarters. He said this requirement is a pressure that has "recently arisen because our users view distributed networking as competitive."

Hunter commented that setting corporatewide standards has enabled him to save some cash and still meet those wide-area needs in tough economic times. "We have just gained a corporatewide agreement on which remote bridge to use [from Crosscom Corp.]," he said, "and we've also standardized on [Novell, Inc.] LANs."

The high growth potential of systems to manage these wide-area networks may depend on users becoming convinced that the "right" product has finally arrived. Todd Dagres, an analyst at The Yankee Group, said network management is where "there is the greatest need and the least capability."

Vendor 'sinkhole'

A recent report from Cambridge, Mass.-based Forrester Research, Inc. described network management systems to date as a "sinkhole" for vendors. The report also states that computer giants IBM, Digital Equipment Corp., Hewlett-Packard Co. and AT&T have recouped less than half their network management investments.

At Occidental, Hunter said, "network management is a big unknown, because I don't believe anyone has yet brought out a product that warrants a $300,000 to $400,000 expenditure. The systems purport to be global networkwide systems but frankly, don't yet deliver."

Faccibene cautioned, though, that "you certainly shouldn't scrimp on network management in the wide area; it's an investment that is as key as putting in the network itself." He said his cost-cutting measures in the brokerage industry pertain more to "getting away from providing carte blanche service and returning to the basics of what information is truly needed."

Another strategy in an economic downturn, Faccibene added, is negotiating longer term networking contracts and avoiding "knee-jerk management" that is short-term-oriented.

Dagres said many companies are turning to video to save on travel and time. For example, he said, "J.C. Penney is saving hundreds of thousands of dollars a year by having their buyers view merchandise over a video network rather than traveling."

He added that the technology for both freeze-frame and full-motion video is "better and cheaper," and that a glut of available bandwidth makes video possible for many companies.

"Time savings are worth more than airfare," Hunter said. He added that while he will remain "very, very cautious of the technology because it is still a substantial up-front investment," the company's myriad overseas operations are "where video will ultimately help us."

PC network tracks mobilized equipment

ON SITE

BY JIM NASH
CW STAFF

OAKLAND, Calif. — Napoleonic generals had a saying: "The loss of a nail, the loss of an army." It means the littlest trifle — a horseshoe nail — can spell defeat when it is forgotten or delivered too late in a war.

George Bush-era generals hold the same concept dear; they just track their nails with worldwide networks of computers. Although the process is aided by personal computers, bar codes, leased lines and mainframes, it remains an enormous task even without the risk of war.

Massive amounts of equipment were mobilized in August with little warning for Operation Desert Shield. It was up to information systems managers in the military to find out where equipment and provisions had to go, how it was going to get there and when it had to arrive. Military Traffic Management Command, part of the U.S. Department of Defense, used its PC network to orchestrate what many consider history's largest and fastest military buildup.

With Desert Shield sweating out its fifth month, system administrators said they are satisfied with the network's performance. Brian Richards, microcomputer program officer for traffic management here, said few shortcomings have been uncovered.

He said an acute shortage of PCs quickly developed in August. "One day you had one computer with three people in a room using it and the next there were 15 people. That slowed things down somewhat."

Richards also pointed to preparation of reservists. Some needed crash courses in advanced versions of software such as Ashton-Tate Corp.'s Multimate and Dbase III+ and Lotus Development Corp.'s 1-2-3.

One of the most striking successes, he said, can be found at the Elounte Island Terminal near Jacksonville, Fla. That terminal had been vacant port space until defense officials realized they needed a new terminal on the East Coast.

Three days after being designated the new terminal in August, it was linked and fully operational with standard and customized communication devices, Leading Edge Products, Inc. Model D PCs and Zenith Data Systems Z-248 PCs. Thirty-five cargo ships have since been loaded at the terminal.

In a sense, Elounte's first days of production were the result of seven years of work. The traffic management division introduced its first network in 1983, linking three offices with little more than spreadsheet software. By the time Iraq invaded Kuwait, the system had evolved into a Novell, Inc. Netware 286 network of 3,500 PCs on 64 fault-tolerant file servers at 35 sites worldwide. Thin Ethernet coaxial cables link PCs within each local-area network. The LANs are connected to 56K bit/sec. leased lines to form a globe-girdling wide-area network.

Commanding officers have become dependent on standard applications that offer file sharing, electronic mail and database manipulation. "When we were setting up Elounte Island," Richards said, "the three commanding generals [of traffic management] were frantically moving from location to location to see that everything necessary to get the job done was available."

He said that officers on the road ran their commands largely by E-mail via portable PCs. They found that they could not afford to be out of the network.

But the network has also found supporters with those working closer to the actual shipping. It has become integral in pinpointing any in-transit gear.

"One of the best things about the network has been the status reporting of cargo shipments," Richards said. "Any number of people, from unit leaders to ship captains, need to know where that equipment is very quickly."

Sharp rows of sand-colored Bradley troop carriers stand idle in a gray asphalt yard along Oakland's Africa Street, awaiting shipment to Saudi Arabia. Every step of their journey to the base was planned, traced and confirmed with the PC networks, said Charles Cann, a traffic management specialist at Oakland Army Base.

Robert Holmgren

Troop carriers *at Oakland, Calif., army base readied for shipment*

Of mice and PCs

In one of the more striking changes that technology has brought to the administration of military planning, PCs and mice have replaced butcher paper sketches of how equipment is to be loaded on ships.

Charles Cann, a traffic management specialist at Oakland Army Base, recently demonstrated the art of fitting objects such as tanks, guns and troop carriers on massive U.S. Navy cargo vessels. What was once done with wax pencils and butcher paper is now completed with computer-generated graphics.

An electronic manifest is compared with the military's master cargo database stored on a Bull HN Information Systems, Inc. Level 6 mainframe at Oakland. Dimensions and weights of the equipment on the manifest are transferred to a PC, which contains the exact layout of a vessel's hold.

Using a mouse, military personnel place a silhouette of each item one by one within the ship's parameters. The application will not allow equipment to be stowed on decks that are inaccessible or too small or for the equipment. A four-color printout is made and given to the ship's captain and the officer in charge of loading the machinery.

JIM NASH

EDI user numbers growing stronger

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — Fulfilling decades-old predictions, companies are beginning to embrace electronic data interchange in significant numbers, but users are walking the EDI path slowly and are finding it marked by pitfalls as well as promises, according to experts at a recent trade show here.

"EDI should be growing faster than it is," said Thomas P. Colberg, a partner in Price Waterhouse's EDI Consulting Group. "Frankly, it's embarrassing to be an expert on EDI and to forecast explosive growth year after year after year."

But if recent trends continue, Colberg may soon recover from his embarrassment. According to Dallas-based EDI consulting firm Spread the Word the number of companies worldwide using EDI — the electronic exchange of business information between companies in a standard format — is growing at 45% annually — robust growth if not exactly an explosion. The number of U.S. companies appearing in the firm's directory of EDI users increased to 9,400 in August, 19% more than the 7,888 that appeared seven months earlier and 94% more than were listed 14 months ago.

While the number of users is rising rapidly, most have automated only a small number of transactions for a handful of key customers or vendors. Speaking at the Electronic Data Interchange Association's 22nd national conference, Colberg quoted a study showing that the average number of trading partners for firms that have embraced EDI is just 33. "The biggest obstacle is the lack of readiness on the part of trading partners," he said.

But a consensus of EDI users and would-be implementers at the conference revealed an even bigger problem. Efforts fail to the degree that firms underestimate how much work is involved in EDI implementations and to the extent that they approach EDI as a narrow technical exercise. "EDI is a culture change on the order of *perestroika*. Technology plays a significant but supporting role," Colberg said.

"The mistake people make is focusing on EDI as a technology, not on overall corporate goals," said Holger G. Ericsson Jr., senior group purchasing manager at Digital Equipment Corp. "We at Digital don't talk about the cost of implementing EDI; we talk about the cost of implementing things like just-in-time and total quality control."

Ericsson said a company should take a top-down look at the way it does business and let EDI follow rather than lead a comprehensive business strategy. For example, in discussing electronic funds transfer with a bank, a firm implementing EDI should ask whether the bank should be doing the company's accounts payable, Ericsson said. "I could take off my shirt and show you the scars because we didn't start to think about these things early enough."

Sears, Roebuck and Co. has taken EDI further than most companies since 1968, when it transmitted its first digital order to a supplier. Now the retailing giant supports 10 EDI transaction sets and swaps 1.4 terabytes of data per month with 700 suppliers.

But Sears struggled to get there, R.J. Ferkenhoff, information services vice president, said in his conference keynote address. "Our early attempts at implementing EDI were difficult and slow . . . We found that talking about EDI was far easier than the actual implementation."

EDI gurus agreed that top management involvement is essential. "You have to get the right people involved from the beginning — in particular, nontechnical senior managers," said Jack Shaw, president of EDI Strategies, Inc. in Marietta, Ga. "It doesn't have to be a lot, maybe an hour a month or a half-day a quarter, but you cannot possibly succeed without it."

Shaw said as a rule of thumb, companies might expect to spend 1% of one year's sales over three to five years for a comprehensive EDI implementation. But, he said, a return on investment of 100% per year is not out of the question.

Colberg said a typical firm should plan to spend $1 million-plus for EDI and could expect a return as high as 5% of sales.

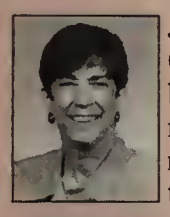
In a comment from the audience to an EDI expert panel, June Heale, EDI systems designer at Eastman Kodak Co., said the hardest technical challenge is not dealing with EDI per se, but with the need to make extensive changes to applications, many of them old and complex, in order to get the benefits of EDI.

To that Shaw responded, "Nuke those systems, don't make incremental changes."

Colberg advised, "Obliterate, don't automate."

MANAGER'S JOURNAL

EXECUTIVE TRACK



Judith A. Campbell has been named director of business process in the information management department at **Xerox Corp.** in Rochester, N.Y.

She is responsible for driving business architecture and business process activities to position Xerox to respond to competitive pressures.

Campbell joined Xerox in 1977 as a technical consultant in the General Services Division. She was most recently manager of strategic technology deployment in corporate information management.

Campbell holds a master's degree in history from Columbia University.

Henryk Starecki has been promoted to director of information systems at **Volvo Finance North America, Inc.** in Rockleigh, N.J., the leasing subsidiary of Volvo North America Corp.

Starecki was previously computer systems manager in the IS department. Before joining Volvo Finance, Starecki worked for Volvo Car Corp. and Volvo Data Corp. in Gothenburg, Sweden.

Donald Jackson has been promoted to corporate vice president of IS at **Computer Products, Inc.** in Boca Raton, Fla.

Jackson, 47, was previously director of systems and chief information officer. He manages all of the IS activities at the $120 million firm.

Before joining Computer Products, Jackson spent 18 years with Unisys Corp.

Who's on the go?

Changing jobs? Promoting an assistant? Your peers want to know who is coming and going, and *Computerworld* wants to help by mentioning any IS job changes in Executive Track. When you have news about staff changes, be sure to drop a note and photo or have your public relations department write to Clinton Wilder, Senior Editor, Management, *Computerworld*, Box 9171, 375 Cochituate Road, Framingham, Mass. 01701-9171.

SECTION FEATURE: BATTLE-SCARRED EXECUTIVES

Putting IS career crises in perspective

BY ALAN J. RYAN
CW STAFF

Larry Betsinger's career baggage includes the stinging memory of the day 20 years ago when he was fired from the company he had worked at for 17 years.

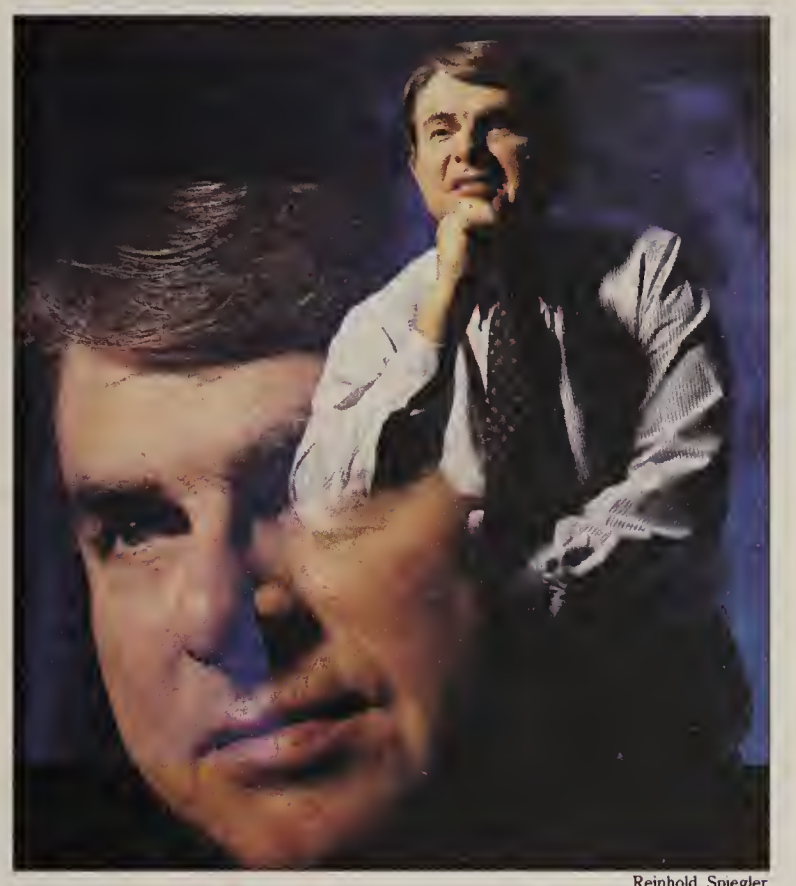
Betsinger had clashed frequently with his boss, who regarded Betsinger's methods in carrying out a mandated centralization of information systems as too heavy-handed. Still, because he knew that his skills were held in high esteem, the possibility of unemployment with a young family to support had never crossed his mind.

"I was stunned," he says, adding that the real culprit wasn't his boss but his own bullheadedness and lack of political finesse.

Few people in any profession reach executive rank without a few battle scars, and IS professionals are no exception. Most IS veterans have been through more than one skirmish. Sometimes the opponent is a boss, sometimes a peer. Occasionally, as in the case of having to fire people, the fight is internal. Win or lose, they say, overcoming the trauma can be a boon to career growth and maturity.

In hindsight, Betsinger says, he learned a great deal through being fired from his job running that company's computer systems. His resentment toward his former employer faded quickly, and within six weeks of losing his job, he had a better position at another company.

Perhaps more importantly, Betsinger, who is now MIS director at UJB Financial Corp. in Princeton, N.J., says being fired taught him important lessons in how to deal with superiors, subordinates and users of the systems for which he provides support. Even if he has a strong opinion on a topic, he says he makes sure he listens to the opposing ideas. And he no longer crams his ideas down the throats of others.



Reinhold Spiegler

In hindsight, *UJB Financial's Betsinger reflects that being fired was a necessary setback in his climb to the top*

Betsinger also believes the firing did him good in a more material way. If he hadn't been dismissed, he says, he might have spent his entire career at one company and made a lot less money. "The only way I got to being a big shot and making lots of money was because I got fired," he says.

That doesn't mean, however, that Betsinger is in total agreement with his old boss. He has come up against some Young Turks who were just as stubborn as he used to be, he says. And, in nine cases out of 10, he's been able to work the problems out.

Betsinger's example is far from unique, says Norm Sanders, managing director at executive search firm Russell Reynolds Associates in Hazlet, N.J., although conflicts with bosses that result in firings represent a much smaller percentage of his business than job switches resulting from clashes with other line managers.

Sometimes such problems can be resolved with a little

Continued on page 52

Recession won't cool demand for talent

BY CLINTON WILDER
CW STAFF

John J. Davis may not be Santa Claus, but he does have some tidings of comfort and joy for high-level information systems executives facing the U.S. recession.

Davis, president of New York-based IS executive search firm John J. Davis & Associates, Inc., said demand for top IS talent remains as strong as ever, and he sees no change in that demand — or in IS executive salary levels — in the coming year.

"When a company needs this kind of talent, we have not seen them balk at paying what it takes to get that talent," Davis said. "I don't see that changing as this so-called recession deepens."

The increasing pressure on IS departments to scrutinize expenditures or, in many cases, to cut them, may in fact *increase* the demand for the best IS executives. The executives who have proven that they can do more with less will be sought-after candidates in a recession, Davis said.

"If you can bring some unique skills to the marketplace and back them up with de facto proof that you have been able to execute, you will be in demand," he said.

Davis said he sees robust demand continuing for senior IS managers, strategic planners and telecommunications executives. The hottest area of all, however, may be computer security and risk management, where more and more companies have focused attention in the past two years, according to Davis.

The two job categories tracked by Davis that will have weak or flat demand in 1991 are chief technology architects (because the job is limited to only the very largest companies) and vice presidents of communications planning. "The demand is simply weak there, and we're not sure why," Davis said. "With the distribution of technology out to the users, you would think that more networking experts would be in demand, but we haven't seen that."

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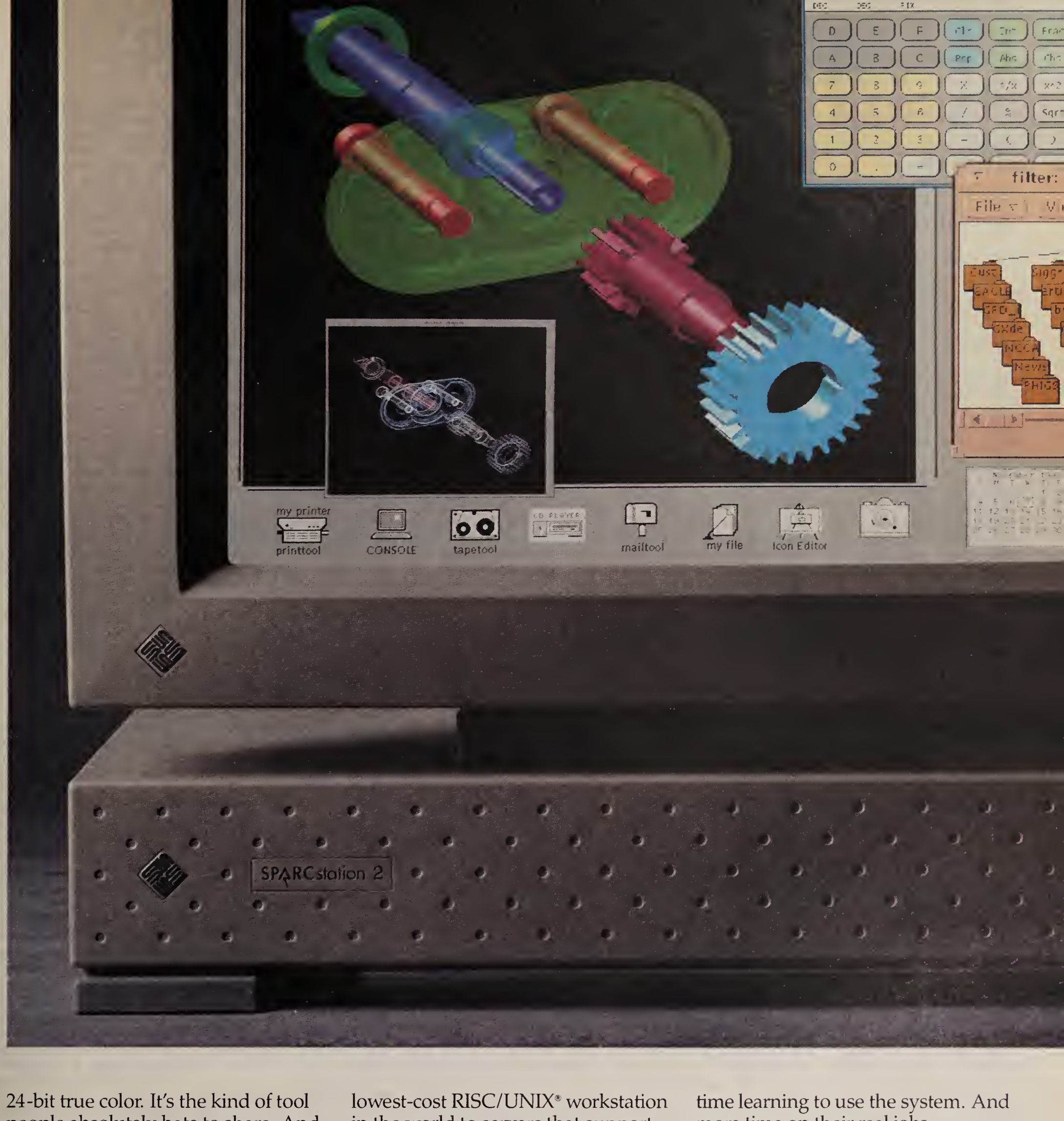

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BOOK REVIEW

Setting up strategic plans that really work

STRATEGIC CHOICES: SUPREMACY, SURVIVAL, OR SAYONARA
By Kenneth Primozic, Edward Primozic and Joe Leben
McGraw-Hill, 272 pp., $24.95

What type of management book do you suppose two longtime IBMers and a consultant would write? It is not hard to imagine that the book would offer successful examples of strategic planning — a mandatory, sometimes feared and often nonproductive business ritual. Throw in a lesson on thinking offensively while exploiting technology, and strategic action begins.

Strategic Choices: Supremacy, Survival, or Sayonara by Kenneth and Edward Primozic and Joe Leben, does not offer the usual recipe for success: Add one part luck, two parts hard work and keep an eye on the competition for good measure.

What the authors do recommend in this short but jampacked business book is a comprehensive five-step plan that incorporates vision, tactics to implement that vision and corporatewide follow-through.

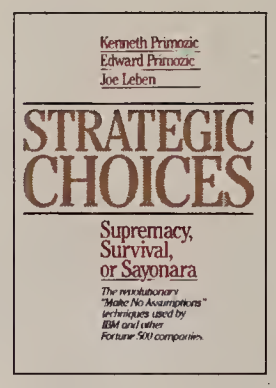
Technology is the glue, they say, that helps the plan work. "Long-term success will be determined by how well [an organization] is able to capture, manipulate, exchange, manage and use information as a strategic tool," the authors write.

A strategic plan is not simple — it commands everyone's complete understanding and belief in all organizational policies and programs, with top management setting the tone and the vision.

Can I get there from here?

The authors argue that while most companies think today's business environment has "a lack of road maps" with which to guide strategic progress, it is the wise company that follows the pattern set by innovators such as Apple Computer, Inc. and American Airlines. This involves incorporating technology and strategy to reach a "new level of organizational effectiveness."

The authors challenge company executives (information systems managers, take note) to answer the question: "Is my organization's competitiveness substantial and sustainable" in relation to others in my specific industry? The successful strategic thinking process begins when this question is answered.



The authors recommend that organizations use a "new set of lenses" to examine themselves. This new way of looking at things can reveal the "linkages" between business functions and processes, as well as ties between the business and its extended enterprises.

Using these "new lenses" will enhance the organization's ability to exploit current "waves of innovation." But the authors warn that unless the company's strategic vision is clear, pursuit of innovation can be costly. It can lead to a loss of power and a bad business image.

Part I of *Strategic Choices* helps readers formulate their vision. It outlines a "linkage analysis planning" technique showing readers how to chart an organization's "extended enterprise" — suppliers, distributors, customers and so on. In this way, companies can focus attention and resources on the links between business functions and processes.

This "electronic channel" thrives on technology-enabled information exchange, which helps each member survive. "Technology applied to information channels will have a major impact on organizations in the 1990s," the authors state. They devote a substantial part of the book to such technology, called "electronic channel support systems [ECSS]." ECSSs are important as systems "that enable an organization to electronically create, distribute and present information or knowledge" to the extended enterprise. The goal is to reach the end user before the competition does.

Parts II and III of the book continue the linkage analysis planning theme in which the firm's vision is linked to strategy and tactics that help implement the vision. Top executives are warned to "make no assumptions" when considering strategy formulation. Management and operations personnel are advised to channel their strategic vision throughout the organization and extended enterprise.

The book's strength is in its examples of successful innovators, such as Federal Express Corp., which used strategic planning to change the rules of the game in the delivery industry. Two appendices are devoted to linkage analysis planning examples from industries such as health care and education.

The plan the book offers is not foolproof — each member of an organization must tie individual goals closely to corporate goals or the organization's strategic vision begins to lose clarity. But *Strategic Choices* is worth the investment for would-be visionary leaders. The ideas presented between its covers may become the backbone of strategic planning in the 1990s.

PAULINE SMITH

Smith is a *Computerworld* senior account executive.

Crises

FROM PAGE 49

accommodation. Gary S. Lynch, a regional manager at Pyramid Development Corp., recalls one example from his former career as a vice president and manager of corporate information security at a large New York brokerage house.

Constantly stymied by a high-level end user in a very data-sensitive area who told him that he had neither the time nor the inclination to discuss security for his personal computer, Lynch says he decided to change his timing and waited until 10:30 one night to meet with the user.

Persistence and the willingness to make his arguments at the user's convenience did the trick. "He became our greatest supporter," Lynch says.

Tougher fights

Other disagreements are more intractable, however. Sanders tells the story of a face-off between an IS manager and a risk-taking line manager who wanted to invest half a million dollars on unproven information technology.

The IS manager felt that the amount was too small to provide any real benefit and too much to spend on a test. "They reached a loggerhead," Sanders says, and in the end, the IS manager was fired. Frequently, the outcome of such stalemates is not firing but a mounting frustration that eventually leads to voluntary departure by one of the parties.

Michael Simmons, executive vice president of technology and operations at Bank of Boston, says there is usually some way to work with adversaries, and the best way is to try to understand them by walking in their shoes.

Lynch agrees that understanding is desirable but adds that it doesn't always produce acceptable compromises. That, he says, is one of the reasons he decided to switch to a job with a vendor.

One situation where understanding did not lead to compromise, Lynch recalls, involved a senior IS development manager who "was absolutely, incredibly against security." Lynch did discover, upon investigation, that the manager had some understandable reasons for opposing new security measures.

The proposed changes would have required the development group to create new interfaces, delaying delivery on a number of systems. The manager felt that delayed products would make him look bad, Lynch says, and that the security interfaces would complicate the lives of users.

Cloud *was hurt by technical staff's lack of experience*

"My goal was to secure systems," Lynch says. "His goal was to have the systems in the users' hands." It was, and remained, a stalemate.

Dissatisfaction and change

Simmons, who changed jobs three times during the 1980s, says anyone who leaves a job does it because of dissatisfaction or for a better opportunity. He has found himself in both circumstances, he says.

Simmons says most of the battles any executive faces are politically oriented. "An individual who wants to be something else in the organization will use anybody else in the organization to get there," whether it involves stealing ideas or using others to climb to the top. Simmons calls that type of worker an "empty suit" and says he's run into many during his career. Betsinger says he's run into that type of worker, too, but he's learned that more often than not, that person will eventually get his or her comeuppance.

"Sooner or later, those people simply can't survive," Betsinger says. And, sooner or later, Lynch adds, the savvy IS manager also learns to share more carefully. Of course, the thing that really matters is the company gets the benefit of the idea, no matter who gets the credit. But credit is also nice, and "as you mature, you learn to let some of the ideas out of the bag but not all of the facts," Lynch says.

No matter whose idea it was, when a system fails, the buck stops at the IS chief's desk. Handling that kind of situation is one of the most traumatic experiences a manager is likely to face.

Avery Cloud, manager of technical service in the IS department at Bowman Gray/Baptist Hospital in Winston-Salem, N.C., says that when inexperience among his technical staff led to the failure of a system critical to the business, he took a lot of heat.

Back in the IS office, Cloud distributed the heat to those who deserved it. He then used the unfortunate situation to show the workers how to work in a crisis situation. "I tried to create a nonthreatening environment and let them feel they had a right to fail," Cloud says. "If it's the first failure, it's easier to take. But don't do the same thing twice."

Dealing with adversaries

While each case must be handled on an individual basis, IS managers who have had to work with adversaries say the following techniques can help defuse conflict and minimize career damage in more than 90% of such encounters:

- **Examine the adversarial relationship from the adversary's point of view.** There may be clues there as to why that person is fighting you (your demands may be creating more work for him, for example).
- **Take time to develop a solution that will work for both parties.** That may mean avoiding the adversary by having one of your employees work with one of his employees. It can also mean finding the common ground where both parties agree to be more flexible and professional.
- **Try to be friends, but do not make that your life mission.** There are some personalities that will always clash; accept it and get on with your job.
- **Get the job done.** Under certain circumstances, that may mean taking a subordinating role to a peer, but the top priority must be work, not ego or stubbornness.
- **If all else fails, get tough.** Sometimes it comes down to your job or the adversary's job. If the adversary is a superior, you may be better off finding another position. If it is a peer, one of you may have to go. If it is a subordinate, the only solution may be to fire that person.

ALAN J. RYAN

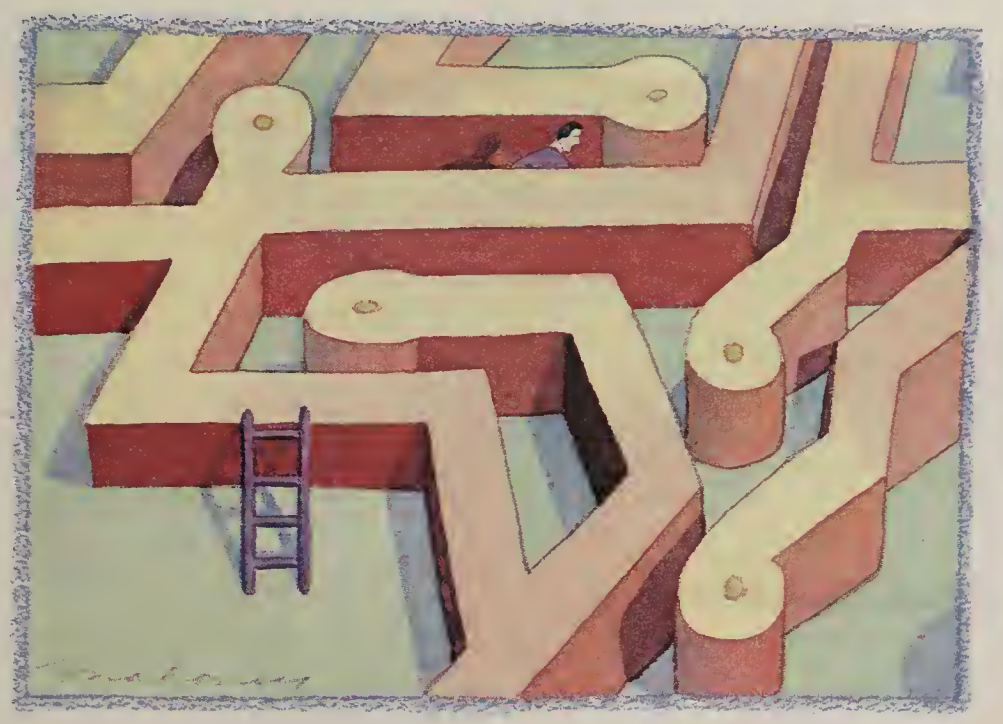
CLIENT/SERVER PRODUCTS

Every which way but easy

BY BARBARA BOCHENSKI

Anyone who has navigated the jumble of client/server definitions and product offerings has probably emerged feeling a bit like a mouse lured into a maze containing small morsels of every conceivable kind of cheese.

The variety is enticing, but it's also disorienting and frustrating. Experts say users could find themselves bumping into dead ends as they try to design client/server systems. The same consultants are upbeat about this and other network computing architectures. However, they warn, there are some important components missing.



Katherine Mahoney

Part of the problem is the vagueness surrounding the term. One way to attempt understanding it is through a consensus of various definitions.

Several experts polled agree that the following five points are needed in a client/server architecture (in other words, if these features are not present, you have something, but you don't have a client/server architecture):

- A client end and a server end that can be distinguished from each other yet interact seamlessly.
- The client portion and the server portion can operate on separate computer platforms, but they don't have to.
- Either the client or the server hardware platform can be upgraded without having to upgrade the other platform.
- The server is able to service multiple clients concurrently.
- The client/server system includes networking capability.

That is the extent of the agreement. Even these requirements — save the first — came with at least some qualification.

For instance, while the client portion usually operates on a personal computer, experts say, the server portion can reside on a powerful workstation, dedicated server hardware, a minicomputer or even a mainframe. However, it is also possible for a client and server to function on the same hardware platform.

"The capability to install the client process and the server process on two separate platforms must be present for a product to qualify as a client/server," says Dave McGovern, partner and co-founder of Database Associates in Morgan Hill, Calif. "However, the end user need not exercise that option."

The distinction that only the option needs to exist applies to "networking capability" as well. However, none of the experts could agree on what was meant by "networking capability." For most of them, it means that the architectural components communicate over a local-area network. Others note that client/server LAN configurations are increasingly being connected to metropolitan- and wide-area networks, which instills them with more power and complexity.

There are four more requirements that many of the analysts listed but did not all agree on. These "debatable" requirements are as follows:

- Action is initiated at the client end. Some people argue that database servers can be programmed to trigger action at a certain time each day.
- A user-friendly graphical user interface should reside at the client end. Others say this is not a requirement.
- The database server should provide data protection, security and SQL capability.

Most experts say a database server should support SQL because of its standing as a de facto standard. "Information Builders' Focus claims to have a client/server architecture, but it doesn't," says Richard Finkelstein, president of Performance Computing, Inc. in Chicago.

On the other hand, says George Schussel, president of Digital Computing, Inc. in Andover, Mass., Focus can be considered among the ranks of client/server products because it divides the processing of a transaction between two platforms.

- A significant portion, or all, of the application logic resides at the client end.

Most consultants concur that the application logic should reside in the client end. The application on the client end controls the display management and data manipulation, while the database server handles the transaction logic and data integrity, Schussel says.

Others disagree. "If the workstation end has any intelligence, then that is a cooperative processing system," says John Dunkle, vice president at Workgroup Technologies in Hampton, N.H.

This brings us to another source of confusion: the difference between client/server, cooperative processing, distributed processing, distributed databases and network computing. As far as some people are concerned, client/server and cooperative processing are synonymous. Others find the distinguishing factor to be the involvement of a mainframe as the server. Others look to IBM.

"The rest of the world was using the term 'client/server,' and IBM introduced the term cooperative processing," says software guru James Martin.

In fact, cooperative processing now falls under IBM's recently formed Client/Server Computing Group. This would seem to indicate that IBM is now placing more emphasis on client/server architecture than on cooperative processing.

"The Client/Server Computing group was formed to ensure a cohesive strategy throughout

Continued on page 54

Bochenski, a 30-year veteran in IS, is a free-lance writer and advanced computing consultant in Bellevue, Wash.

INSIDE

Tips, Rules, Guidelines
What you need to know about client tools, server tools and network operating systems. Page 55.

Product Guide
A comprehensive listing of portable front-end application development tools. Page 59.

Continued from page 53

IBM," says Dick Newman, manager of planning for the IBM group. "In both client/server and cooperative processing, the application is spread between the workstation and the host. In cooperative processing, most of the processing is done on the host. In client/server processing, most of the processing is done on the workstation."

Most analysts agree that client/server systems can be considered a subset of distributed processing. However, they warn, you should never assume that client/server systems are distributed database systems.

Distributed systems require various transparency capabilities as well as adequate recovery management. Adequate recovery management and the handling of two-phase commitments have posed some of the biggest challenges to vendors trying to deliver these systems.

Some vendors market their client/server systems as also having distributed database systems. However, in most of those cases, the product is the current version of distributed database that they've been working on for years.

Not quite there

Most consultants say client/server architecture is unprepared to perform distributed database functions. Martin says, "With a client/server architecture, you're talking about two devices interacting. With distributed database processing, that number could be in the hundreds."

The other concern is the concept of a "unit of work," a term used in distributed database systems to indicate all the work that must be accomplished before a transaction can be committed. If any portion of the unit of work on any portion of the distributed database fails, all portions of the unit of work must be rolled back

"Remote procedure calls [RPC] are the classical way to implement client/server architectures and have no notion of a unit of work," says John Tibbetts, president of Kinexis, a consulting firm in San Francisco. "When it comes time to commit work in a distributed database system, you have to have a peer-to-peer protocol. You could use the client/ server RPC to prepare the transaction and a peer-to-peer protocol to commit or roll it back."

Members of the Transaction Processing standards committee, sponsored by the International Standards Organization and ANSII, say a standard will be ready by the middle of 1991 that will handle many of the problems currently faced by systems that try to do distributed database operations.

According to Martin, a new breed of software that he refers to as a "client/server management system" will address transaction processing as opposed to just queries, ensuring that transactions are not lost when failures occur.

A vendor that specializes in such software, he says, is Cooperative Solutions, Inc. in San Jose, Calif. The firm plans to announce a product in the first quarter of 1991 that would generate transaction-based systems on a LAN using a client/server architecture. The monitor would provide the same services now available in a mainframe transaction monitor, says Frank Clugage, director of product marketing at Cooperative Solutions.

"Today's software has some of the capabilities needed on the database end, but the application end doesn't," Clugage says. "The database vendor will say that when an error occurs and we need to roll back, they take care of all that. Well, they do — on the database side. But the application is not taken care of, since it's now partly running on the client."

Another major concern is systems administration. Many large companies are starting to move into IBM's Systems Managed Storage to manage their vast storage needs.

In addition, people are wondering how they will distribute and refresh the client software sitting on multiple workstations. IBM's recently announced Systemview strategy has promised to address client/server system administration issues. However, it is doubtful if the strength and quality of products will be ready when people start to need them.

Despite these concerns and the confusion over definitions, firms are moving in the direction of what they consider to be a client/server architecture — whether that is a "true" client/server architecture or their own version of it.

"Big companies who are heavily into client/server have shut up about it" to keep a hold on what they consider prime technology, says Larry DeBoever, president of DeBoever and Associates. "They know it gives them tremendous competitive advantage." •

Buyer beware

What kinds of products exist that support client/server systems? You can break them into three categories: client tools (fourth-generation languages and application development packages), database servers and local-area network operating systems (see story page 55).

In all three categories, however, the rule is 'buyer beware.' "Just because a product is linking up to a back-end server does not mean that it performs well or that it's easy to use," says Richard Finkelstein, president of Performance Computing, Inc. in Chicago.

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CLIENT TOOLS

Features traditionally considered ideal in application development tools may not be so relevant in a client/server architecture. Todd Johnson, a consultant at Lante Corp. in Chicago, says to choose a tool for the newer setup, you may want to look at the following in a new light:

• **The user interface.** The tool should allow tight control over the look-and-feel aspects of the user interface, and there should be custom procedures to validate data values for an individual data field.

The developer also needs to be able to modify portions of the user interface throughout the development cycle, independent of changes to other portions of the program code.

The front-end tool should insulate the developer from the system calls necessary to produce the display. High-level functions to produce list boxes, radio buttons, push buttons, pull-down menus and other standard interface components should be well integrated into the development environment. Some tools provide spreadsheet and text-editing objects, such as Gupta Technologies, Inc.'s SQL Windows, Jyacc, Inc.'s JAM and Borland International, Inc.'s Paradox.

An access path should also be provided to let the developer access system-level calls to customize the functions.

• **Close integration of the front-end environment with the database server.** Back-end functions are usually accessed via an application programming interface (API) provided by the vendor. Many front-end tools allow the application to call these APIs directly; however, fourth-generation languages eliminate them. For example, some tools can take the results of a database query and place them directly into a user interface object. Paradox and SQL Windows provide these types of functions.

• **Reporting facilities.** Simple report layouts and calculations should not require extensive programming, so look for a tool that inherently supports the SQL language aggregate operators. Don't overlook multiple font and graphics output capabilities. Paradox 3.5 contains exceptional report-generation facilities.

• **Platform portability.** Portability should exist at both the front and back end of the application so that users can choose the database platform that best suits the needs of the current application. Several front-end tools support multiple graphical user interface environments, such as Easel Corp.'s Easel and Channel Computing, Inc.'s Forest & Trees, which are both available for Microsoft Corp.'s Windows and Presentation Manager.

• **External function calls.** The development tool is more useful if it contains a facility to make calls to code written outside of the native environment. This allows the application to take advantage of existing code libraries, reducing development time and allowing for code reusability. This also lets the developer write critical portions of the application in C or assembler for faster performance.

• **Interfaces to other applications.** The application should share data with other standard applications. Data from the client/server application can be written to standard file formats to be read by the standard applications.

• **Licensing costs.** Most vendors provide a standard developer package, allowing any number of developers to use the tool. Sometimes, a separate license must be purchased for each developer. SQL Windows and Easel require a runtime environment to execute the completed application. You may need to purchase a runtime license for every workstation.

For a list of portable application development tools, see page 59. •

SERVER TOOLS

Choosing the wrong database server can mean cost overruns and even canceled projects, says Richard Finklestein, president of Performance Computing, Inc., a database management system consulting firm in Chicago. Some simple guidelines may help you avoid common mistakes:

• **Rule 1:** *Stored procedures minimize network traffic.* With stored procedures, the application issues only one command to execute a procedure. Good implementations are found on the Microsoft Corp./Sybase, Inc. SQL Server, Ingres Corp.'s Ingres server and IBM's OS/2 Extended Edition Database Manager.

• **Rule 2:** *Look for a cost-based query optimizer.* Query optimizers use statistics stored in the system catalog to determine the fastest way to retrieve data. All OS/2 database servers except for Oracle Systems Corp. use statistically-based optimization. Ingres and OS/2 Database Manager are particularly strong in this area.

• **Rule 3:** *The database needs to enforce integrity consistently across all client applications.* Referential integrity is the best way of doing this, and it can be implemented in two ways. IBM's OS/2 Extended Edition Database Manager and Digital Equipment Corp.'s RDB/VMS incorporate it in the SQL CREATE TABLE command of the data definition language.

SQL Server and Ingres use "triggers"

Continued on page 58

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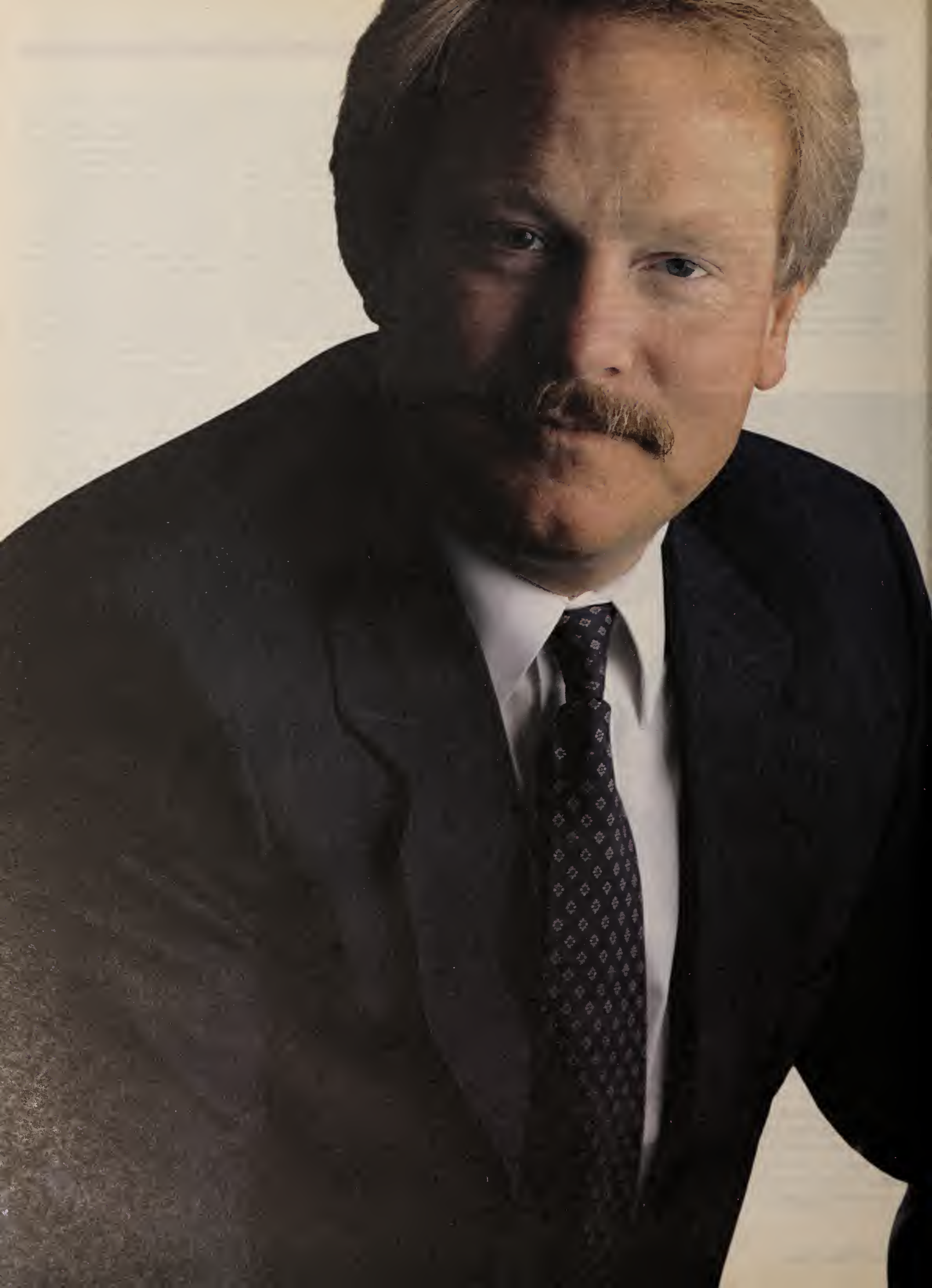

"We've got a complete SAA system up and running, and it's hard to say who's happiest: our programmers, our users, our customers, or me."

Keith Sievers, VP/Information Systems and Treasurer,
Federal Kemper Insurance Company

Federal Kemper Insurance Company is a home and auto insurer who's found some insurance for themselves, against system obsolescence.

It's a policy called SAA,™ or IBM Systems Application Architecture.™

Their SAA system is a client-server approach that ties IBM PS/2®s running OS/2® (in remote locations and the home office) with an ES/3090™ host. They chose SAA for both short- and long-term advantage.

"In our business," says Keith Sievers, "there's a tremendous need to cut costs, to make everybody as useful as possible. SAA is helping us do that. We also need a platform that's consistent, easy to manage, and built for growth. For us, going with SAA was just the obvious thing to do."

For programmers.

The first people to notice an improvement were FKI's programmers.

"We did everything in COBOL, but in the Presentation Manager™ environment," says Keith. "All of a sudden, people who'd been here for years were driving to work a little faster. They were doing better work, they were making a difference, and they saw results quickly, even without CASE tools."

FKI now has applications for data, image and customer service that are easy to use and easily portable. And they're delivering more function to users at less cost, thanks to SAA's cooperative processing.

Says Keith, "Under SAA, we're moving a lot of our processing from the mainframe to PCs, which offer flexibility and portability. And we see real benefits from a disaster recovery standpoint."

For users.

And do users like it?

"They ought to," says Mr. Sievers, "they helped us design it. SAA screens are sort of a personal thing, so it only made sense to include the people who'd be using them every day. Our old screens had acronyms tucked into every available space. The new ones are a lot easier to look at and understand, and everybody loves the mouse. It's less like work and more like fun."

And while multitasking doesn't mean much to the public, it's going to be a real plus for FKI's customers.

For customers.

"When policyholders call with questions, they want answers fast. And when our SAA system is fully implemented, they'll get them. Our representatives will be able to solve problems on the spot just by popping a new window onto the screen. Instead of 'I'll get back to you later,' they'll say 'Here's the answer right now.' "

Keith Sievers has other reasons for liking SAA, especially since MIS isn't his only job. He's also the company treasurer.

"We wanted a leading-edge system that would still be leading-edge five years from now, a base we could build on, something we could enhance with AI, voice or image technology, but without having to toss out what we already owned. People ask questions about SAA, but of all the options we explored it was easily the *least* questionable.

"We're very competitive, and the truth is, only two things separate insurance companies—cost and service. SAA gives us an edge both ways."

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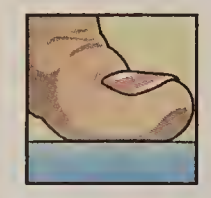
Continued from page 55
to enforce referential integrity. A trigger is a set of procedural and SQL commands that automatically executes whenever a table is modified. The first option is more reliable because it is developed and tested by the DBMS vendor.

• **Rule 4:** *Embedded SQL commands are preferable to function calls in application programming interfaces.* Most SQL database servers use this approach, but XDB has carried it one step further. Because it supports DB2's syntax, error codes, data types and semantics, it is an excellent DBMS for developing DB2 applications on a personal computer platform. OS/2 Extended Edition also has a very high degree of conformance.

• **Rule 5:** *Database server architecture will have a substantial effect on resource utilization.* On multithreaded/single-server machines, one database server runs on the computer, and a thread is created by the server for each user connection. SQL Server and Gupta Technologies, Inc.'s Sqlbase are two examples of this type.



Other servers, such as Oracle, use a process-per-user architecture, which creates a new process for each user connection. The downside to this architecture is that it requires more memory than threads and consumes more CPU resources. On the plus side, process-per-user servers can take advantage of multiprocessor hardware by distributing the process load across several processors.

Ingres combines both approaches with a multithreaded/multiserver architecture. These servers offer low resource consumption using multiple-processor computers by allocating servers to each of the available processors.

• **Rule 6:** *Just because it says "portable" doesn't mean it is.* Not all vendors support all platforms equally. For example, the VMS port of Oracle Version 6 supports Oracle's proprietary PL/SQL language, while the OS/2 version does not. SQL Server Version 4.0 is available only on Unix platforms. The latest release of Ingres has been ported to several Unix platforms but is not available under OS/2 or other lightly supported Unix systems. •

COMMUNICATIONS TOOLS

Deciding which network operating system is best for your client/server system depends primarily on the size of your company and the connectivity needs of your departments, according to Steven L. Guengerich, director of communications, and David A. Rhodes Jr., consultant, at Business Systems Group, Inc., a national systems integration firm in Houston.

If you've got 10 to 20 users with one file server, the network operating system should be able to run on the same file server as the database package. This requirement rules out Novell, Inc.'s Netware if you're planning to use Oracle Systems Corp.'s Oracle Server, Microsoft Corp.'s SQL Server or Gupta Technologies, Inc.'s Sqlbase. All of these require a nonproprietary multitasking operating system such as OS/2 and Unix.

With IBM's LAN Server and Microsoft and 3Com Corp.'s LAN Manager, on the other hand, the file server can support both the network operating system and the database server.

Separating the systems

If you have 50 or more users with more than one dedicated server, you can run the two systems on separate servers.

In this situation, Netware becomes more attractive. You can connect OS/2 machines running Oracle's Server for OS/2, SQL Server, Sqlbase or Ingres Corp.'s Server for OS/2 to the network using Novell's Netware Requester for OS/2. The Requester enables users to access the database server's resources via Novell's Sequenced Packet Exchange, Microsoft's Named Pipes or IBM's Netbios.

If your firm is large, ease of access to and management of databases across networks and platforms becomes a priority.

In these environments, systems such as Banyan Systems, Inc.'s Virtual Networking Software (Vines) often become the network operating system of choice. Because of its integrated Streettalk global naming service, users can transparently access resources anywhere on the network.

Vines servers are Unix-based, however, so there are few database servers available to run on them. However, Oracle offers Oracle Server for Vines, and Vines users running DOS can use Netbios to access Sqlbase. SQL Server supports only LAN Manager and Netware clients, but Named Pipes support for Vines is coming soon.

In large environments, it is also important to consider the network operating system's ability to expand into other systems, including Unix servers, minicomputers and mainframes.

Novell currently offers gateways for Netware into IBM 5250 minicomputers and 3270 mainframes, as well as Transmission Control Protocol/Internet Protocol for Unix networking. Other third-party vendors — including AST Research, Inc., Digital Communications Associates, Inc. and Racal Interlan, Inc. — offer similar gateways.

Microsoft and Digital Communications Associates have teamed up to create the DCA/Microsoft Communications Server to run as a server-based application with LAN Manager. IBM's OS/2 Extended Edition also includes a communications manager for gateways into minicomputers and mainframes. •

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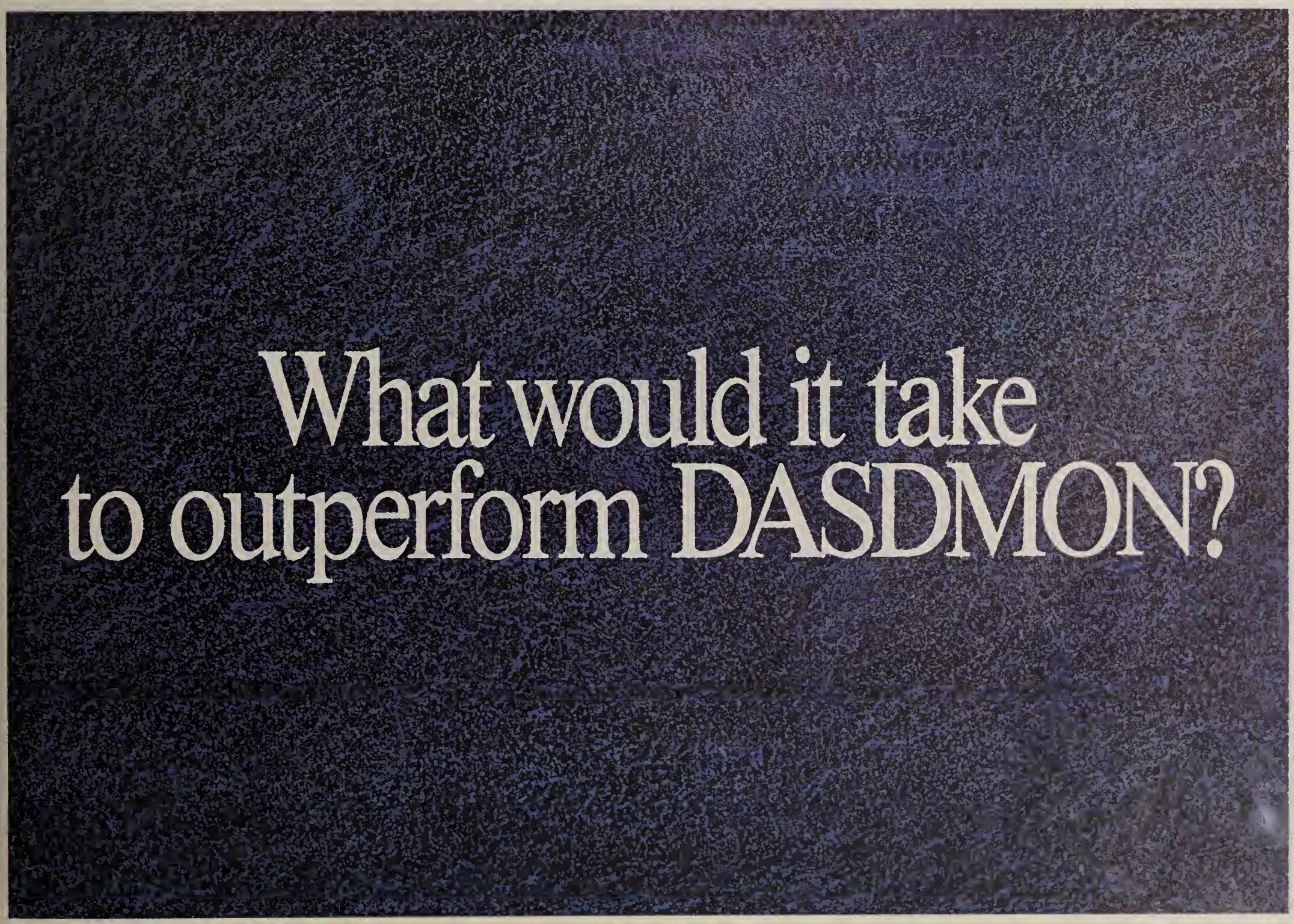
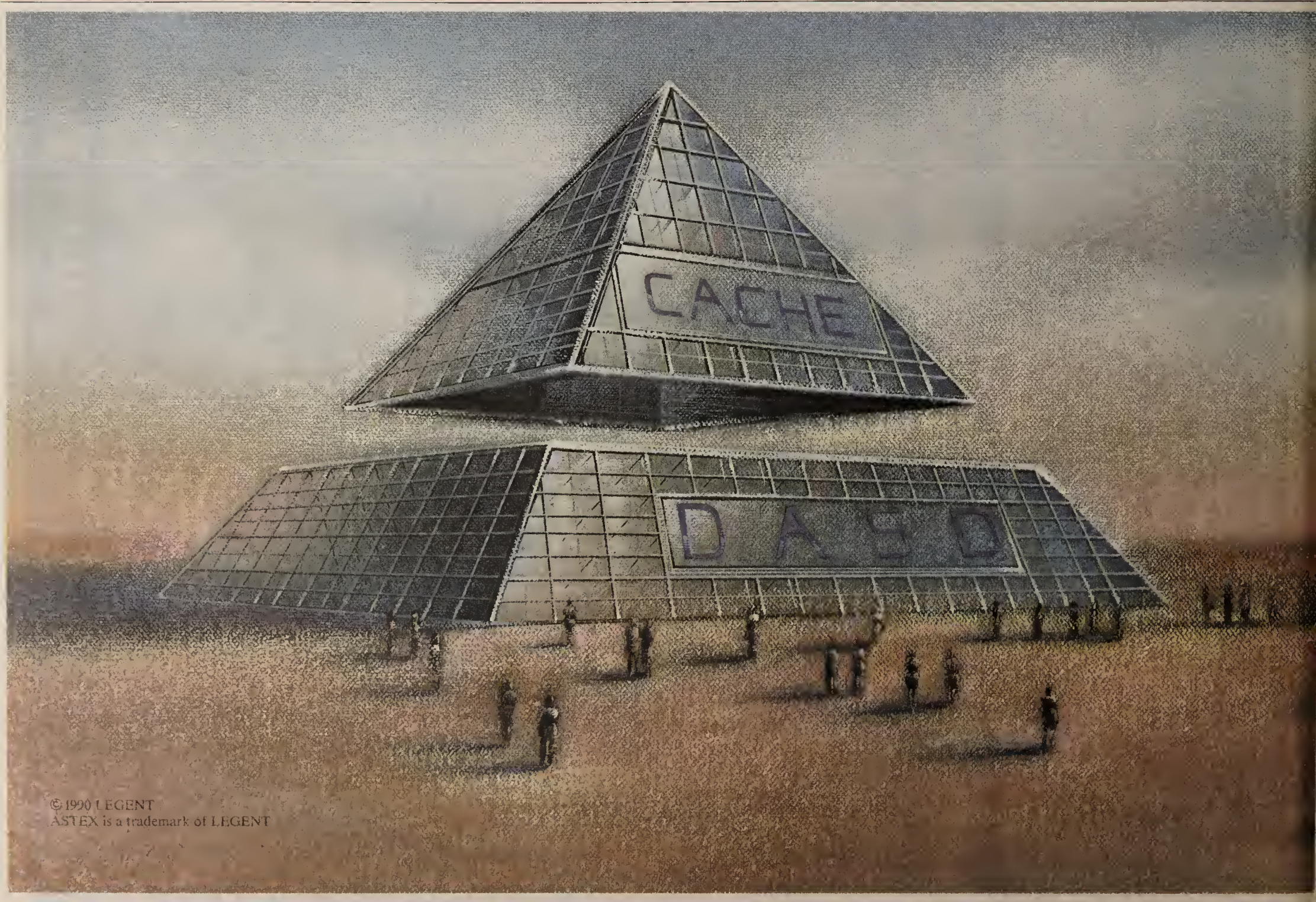
Portable application development tools

VENDOR	PRODUCT	DATABASE SERVERS ACCESSED	CLIENT OPERATING SYSTEMS SUPPORTED	CLIENT HARDWARE SUPPORTED	PROGRAMMING LANGUAGE	GENERATORS INCLUDED	CALL LANGUAGES SUPPORTED	NETWORK OPERATING SYSTEMS SUPPORTED	RAM REQUIRED ON CLIENT	HARD DISK STORAGE REQUIRED	USER INTERFACE	PRICE	COST OF ADDITIONAL USERS
Blythe Software, Inc. (415) 571-0222	Omnis 5	DEC Rdb, IBM DB2 and OS/2 EE Database Manager, Informix, Ingres, SQL Server, Oracle Server	DOS, Macintosh	Apple Macintosh Plus, Intel 80286 and higher IBM PCs and compatibles	Omnis Script	Application, form, report	Assembly, C, Pascal	Apple Share, any AFP or Netbios, LAN Manager, Novell Netware	1M on Apple Macintosh; 2M on PC	2M	Microsoft Windows, Apple Macintosh	$1,000	$200
Borland International, Inc. (408) 438-8400	Paradox 3.5 with Paradox SQL Link	DEC Rdb, IBM OS/2 EE Database Manager, SQL Server, Oracle Server	DOS	Intel 80286 and higher IBM PCs and compatibles	Turbo C	Form, report	PAL (Paradox Application Languages)	3Com 3+ Open, IBM LAN Server, LAN Manager, Novell Netware, Banyan Vines	1M	1M	Character-based	$795 for Paradox 3.5, plus $395 - $495 for SQL Link	$995 for each additional five users
Channel Computing, Inc. (603) 659-2832	Forest & Trees	Gupta Sqlbase, SQL Server, Oracle Server	DOS	Intel 80286 and 80386 IBM PCs and compatibles	Uses pop-up windows and menus	Application, report	NA*	IBM LAN Server and PC Net, LAN Manager, Novell Netware, Banyan Vines	1M on Intel 80286; 2M on 80386	Less than 1M	Microsoft Windows, HP New Wave	$495 - $2,995	$495
Dataease International, Inc. (203) 374-8000 (800) 243-5123	Dataease SQL Professional Version 1.0	SQL Server	DOS, OS/2	Intel 80286 and higher IBM PCs and compatibles	Dataease	Application, form, report	Assembly, Basic, C, Cobol, Pascal	3Com 3+ Open, LAN Manager, Novell Netware	2M for DOS; 4M for OS/2	10M	Character-based	$995 - $1,995	$1,750 per additional five users
Datalex, Inc. (800) 962-8888 (415) 362-4466	Entrypoint 90	Oracle Server	DOS	IBM PCs and compatibles	Logic	Application, form	Assembly, C	Any Netbios, LAN Manager, Novell Netware, Banyan Vines	350K	1.5M	Character-based	$1,075 for developer license	$725
Easel Corp. (617) 938-8440	Easel	IBM OS/2 EE Database Manager and DB2, SQL Server	DOS, OS/2	Intel 80286-based IBM PCs and compatibles	Easel	Application, form	Basic, C, Cobol, Pascal	LAN Manager, Novell Netware, Banyan Vines	640K	400K	OS/2 PM	$7,500	$350
Guidance Technologies, Inc. (412) 231-1300	Choreographer	IBM OS/2 EE Database Manager, SQL Server, Oracle Server	DOS, OS/2	Intel 80386-based machines	Proprietary 4GL	Application form	Assembly, Basic, C, Cobol, Pascal	LAN Manager, Novell Netware	4M	2M	OS/2 PM, Microsoft Windows	$7,500 for developer license	$295



PRODUCT SPOTLIGHT

VENDOR	PRODUCT	DATABASE SERVERS ACCESSED	CLIENT OPERATING SYSTEMS SUPPORTED	CLIENT HARDWARE SUPPORTED	PROGRAMMING LANGUAGE	GENERATORS INCLUDED	CALL LANGUAGES SUPPORTED	NETWORK OPERATING SYSTEMS SUPPORTED	RAM REQUIRED ON CLIENT	HARD DISK STORAGE REQUIRED	USER INTERFACE	PRICE	COST OF ADDITIONAL USERS
Gupta Technologies, Inc. (415) 321-9500	SQL Windows	Gupta Sqlbase, IBM OS/2 EE Database Manager and DB2, Oracle Server	DOS	IBM PCs and compatibles	SAL (4GL SQL Windows Application Language)	Application, form, report	Assembly, C, Pascal	Any Netbios, 3Com 3+ Open, LAN Manager, Novell Netware, Banyan Vines	1M; 2M recommended	1.2M	Microsoft Windows	$1,295	$150
	SQL System Programmer's Toolkit	Gupta Sqlbase Server, IBM OS/2 EE Database Manager and DB2, Oracle Server	DOS, OS/2	IBM PCs and compatibles	C, Cobol	Application	C, Cobol	Any Netbios, 3Com 3+ Open, LAN Manager, Novell Netware, Banyan Vines	640K	3M	Character-based, OS/2 PM, Microsoft Windows (C API only)	$995	$995
Information Builders, Inc. (212) 736-4433	Focus	Focus DB Server, IBM OS/2 EE Database Manager, DB2 and SQL/DS, SQL Server, Teradata Nucleus	DOS, OS/2, Unix	IBM PCs and compatibles, Unix workstations	Focus 4GL	Application, form, report	Ada, Assembly, Basic, C, Cobol, Pascal	3Com 3+ Open, LAN Server, LAN Manager, Novell Netware, PCSA, Banyan Vines	470K	5M	Character-based, OS/2 PM, Microsoft Windows, OSF Motif, AT&T Open Look	$1,295+; $1,495 per four users	$1,295
Intelligent Environments, Inc. (508) 640-1080	Applications Manager	IBM OS/2 EE Database Manager and SQL/DS, Oracle SQL/DS, SQL Server	OS/2	Any machine running OS/2	AM HLL (high-level language)	Application, form, report	C	LAN Manager, LAN Server, Novell Netware	4M	1M	OS/2 PM	$5,000	$250
JYACC, Inc. (212) 267-7722	JYACC Application Manager (JAM)	VAX SQL/Services and Rdb, Gupta Sqlbase, DB2, Informix, Ingres, SQL Server, Nucleus, Oracle Server, Progress, Share Base, Ultrix/SQL, XDB Server	DOS, OS/2, Unix, VMS, MPE/XL, Primos, iRMX, Xenix, VOS, AOS/VS	IBM PCs and compatibles, various midrange machines, Amdahl	C	Application, form, report	C, Cobol	DEC Decnet, LAN Manager, Novell Netware, SPX, TCP/IP, Banyan Vines, XNS	640K	4M	Character-based, OSF Motif 3270	$595 - $35,820, depending on hardware	No per-client charge
MDBS, Inc. (317) 447-1122	Object/1	IBM OS/2 EE Database Manager, MDBS IV, SQL Server, Oracle Server	DOS, OS/2	Intel 80286 and higher IBM PCs and compatibles	Object/1	Application, form, report	Assembly, Basic, C, Cobol, Pascal	LAN Manager, Novell Netware	4M	6M	OS/2 PM, Microsoft Windows	$995	No per-client charge
Neuron Data (415) 321-4488	Nexpert Object	Ashton-Tate Dbase III, DEC Rdb, Gemstone Ontos, DB2 and SQL/DS, Informix, Ingres, Oracle Server, SQL Server	DOS, OS/2, Unix, VM, MVS, Macintosh, VMS	IBM PCs and compatibles, Macintosh, Unix workstations, VMS machines, MVS machines	Nexpert Rules and Objects	Application, form, report, expert system	Assembly, Basic, C, Cobol, Pascal	Any supported by the server	640K	2M	Character-based, OS/2 PM, Microsoft Windows	$5,000 - $50,000 for developer license	$750 - $50,000; run times sold by hardware model
Progress Software Corp. (508) 275-4500	Progress 4GL/RDBMS	DEC Rdb and RMS, Oracle Server, Progress	DOS, OS/2, Unix, VMS, CTOS/BTOS	Any DOS, OS/2 PCs, Unix workstations	Progress 4GL	Application, form, report	C	LAN Manager, Novell Netware, NFS, Banyan Vines	640K	3M	Character-based, Microsoft Windows, X Window System-based managers	$1,050 - $190,000	NA



PRODUCT SPOTLIGHT

VENDOR	PRODUCT	DATABASE SERVERS ACCESSED	CLIENT OPERATING SYSTEMS SUPPORTED	CLIENT HARDWARE SUPPORTED	PROGRAMMING LANGUAGE	GENERATORS INCLUDED	CALL LANGUAGES SUPPORTED	NETWORK OPERATING SYSTEMS SUPPORTED	RAM REQUIRED ON CLIENT	HARD DISK STORAGE REQUIRED	USER INTERFACE	PRICE	COST OF ADDITIONAL USERS
Revelation Technologies, Inc. (212) 689-1000	Advanced Revelation 2.0 with SQL Server Bond	SQL Server, Ashton-Tate Dbase	DOS	IBM PCs and compatibles	R/Basic	Application, form, report	Assembly, C	LAN Manager, Novell Netware, Banyan Vines, 3Com 3+ Open	640K, plus 1M expanded memory	None required	Character-based	$995 for developer	$695 for 4-user LAN Pack option
SQ Software (216) 991-0551	SQR, Easy SQR	Ingres, Oracle Server, SQL Server	DOS, OS/2, Unix, VMS	More than 40 platforms, including IBM PCs and compatibles, Unix workstations, DEC, HP and other midrange machines	C	Report	Assembly, C, Cobol, Pascal	LAN Manager, Oracle SQL Net	400K for DOS	2.7M for DOS	Character-based for SQR; Windows for Easy SQR	$395 - $38,000, depending on hardware	$395 - $38,000
Unisys Corp. (215) 986-4011	Ally	Ashton-Tate Dbase III, C-ISAM, Informix, Oracle Server	DOS, OS/2, Unix, Unisys BTOS/CTOS	IBM PCs and compatibles, AT&T 3B series, Unisys B series, U 5000, 6000 and 7000 series, NCR 32 series, Sun Sparcstation, 300 and 400 series	Ally	Application, form, report	Assembly, Basic, C, Cobol, Pascal	Any TCP/IP, TTY	640K	11M	Character-based, Microsoft Windows	$880 - $55,000	$253 - $22,000; developer and run-time licenses sold by hardware model, not per user
Vinzant, Inc. (219) 763-3881	Sqlfile System	SQL Server, Novell Netware SQL, Oracle Server	DOS, OS/2	IBM PCs and compatibles	C	Application, form, report	NA*	LAN Manager, Novell Netware	640K	None required	Character-based	$595 per server	No per-client charge
Wordtech Systems, Inc. (415) 254-0900	Quicksilver/SQL	Gupta Sqlbase, Oracle Server	DOS, Unix	IBM PCs and compatibles	Dbase with embedded SQL	Report	Assembly, C	3Com 3+ Open, Invisible, LAN Manager, Lantastic, Novell Netware, Banyan Vines	640K	2.5M	Character-based	$795	No per-client charge

*Product automatically translates other languages into SQL, therefore does not make calls directly to or from traditional programming languages.

The companies included in this chart responded to a recent survey conducted by *Computerworld*. When a vendor is unable to provide specific information about its product, the abbreviation NP (not provided) is used. When a question does not apply to a vendor's product, the abbreviation NA (not applicable) is used. Further product information is available from the vendors.

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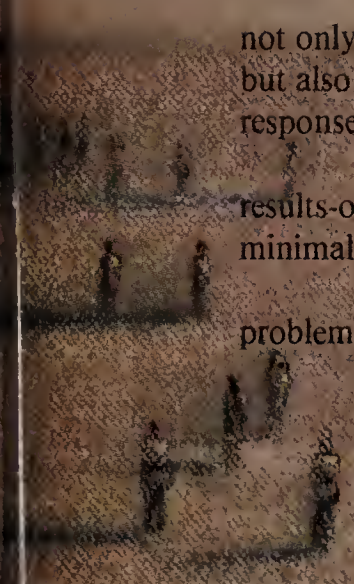

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digital

Johnson Wax's people investment

Continued from page 1

employees. In October, the program won the Assist Award from the Association for Computer Training and Support.

Finding and keeping qualified staff has become a major IS issue, and Johnson has chosen to invest in developing internal expertise rather than turning to consultants and outsourcing for "quick fixes," according to Dean LaGrange, senior manager of technical support, who helped design Proficere. The application gives the $2.5 billion privately owned maker of such consumer products as Raid insect repellent and Pledge furniture polish a firm grip on the IS skills it houses.

Implemented in the fall of 1989, Proficere compares available expertise with the skills required for upcoming projects so IS can determine its educational needs. Proficere is serving as a model for other Johnson business areas and will be licensed to other companies, such as Xerox Corp.

Internally, three functional departments — the U.S. consumer products sales staff, a 1,200-person consumer products manufacturing plant and corporate research and development — are involved in development projects modeled on Proficere.

The Proficere project is one component of an all-out Johnson effort to "re-engineer our business processes," says Bill Vinck, senior IS director of policy and planning. Another is the company's recent implementation of its $5 million Computer Integrated Customer Service System, which Johnson says has reduced customer order turnaround time from 14 days to approximately five.

Another part of the re-engineering process has involved decentralizing the IS support function by placing technicians in each business unit, says Tim Theriault, head of end-user computing services. In the R&D group, for example, corporate IS support time previously spent answering user questions has dropped from 60% to 25%. "We're trying to go even lower in reducing calls to the corporate help desk," he says.

All photos courtesy of Johnson Wax

Theriault, *head of Johnson's end-user computing services, says a re-engineering of the IS support group included decentralization*

IS recognized that it needed to get a handle on its resources, particularly on the staffing side, when Johnson undertook converting thousands of business applications from a Honeywell, Inc. platform to an IBM mainframe in 1988. According to the IS staff, the shift coincided with the October 1988 arrival of forward-thinking CIO Burden from Firestone Tire & Rubber, Inc.

Today's technologically spiraling industry, the company realized, meant keeping staffs trained in emerging database, fourth-generation language and a myriad of other technologies that could make or break IS' ability to keep Johnson competitive. For example, the company used Proficere to identify a Focus support expert quickly when the employee who handled that function in the end-user computing area left the firm.

Proficere will evolve, Burden says, because "we need to keep developing expertise to define systems that can exchange information effectively and rapidly with each other and with the corporate mainframe."

A primary goal of the firm is to reduce the number of major computing platforms, which now stands at seven. "It takes a lot of people to support all those platforms, and it is difficult to make integration seamless," explains Tom Heyerholm, senior IS manager of network services resource management.

Proficere has actually saved the company money. The company says it has so far decreased its annual professional development investment — $440,000 in 1989 — by 20%. For example, instead of individuals signing up for outside IBM DB2 courses ad hoc at "$1,000 a pop," the company used Proficere to identify 25 people needing training in that area and brought an instructor on-site for $2,800, says Mike Berezowitz, IS education manager.

To design Proficere, the IS professional development group put together more than 100 IS job models that detailed the skill levels required for projects. "We probably hadn't rewritten our job descriptions in at least 10 years," says Lou Sesso, senior IS manager of resource development.

The job models set up a rating system for key IS skill areas such as business, personal, interpersonal and technical expertise. Interviews with staff provide data about an employee's existing skill level, and Proficere compares that data with the skill level required. Those employees and managers with access authority then determine the "percentage qualified" of an individual for a given project and identify training areas needed. •

At A Glance

SC Johnson wax

Sales	$2.5 billion
Employees	13,000 in 47 locations worldwide; 402 in information services
Chief information officer	Laurance Burden
IS budget	More than $70 million
Key systems	IBM 3090 Model 300; 3090 Model 200; DEC VAX 6420s and Vaxclusters; IBM AS/400 (main computing platform overseas); Stratus Computer and Tandem Computers fault-tolerant systems for manufacturing applications
Host operating systems	IBM MVS (corporate systems), VM (marketing, scanner processing, demographic analysis); DEC VMS
Personal computers	2,000 IBM PCs (standardizing on Dell Computer Intel 80386-based systems), several hundred Apple Macintoshes
Database software	IBM DB2, Software AG Adabas (phasing out)
Development software	Texas Instruments Information Engineering Facility
Networks	British Telecom Tymnet with IBM Systems Network Architecture protocols; Fiber Ethernet supporting Macintoshes, IBM PC-based Token-Ring and Decnet; TAT-8 transatlantic fiber trial under way

When it comes to networking solutions,

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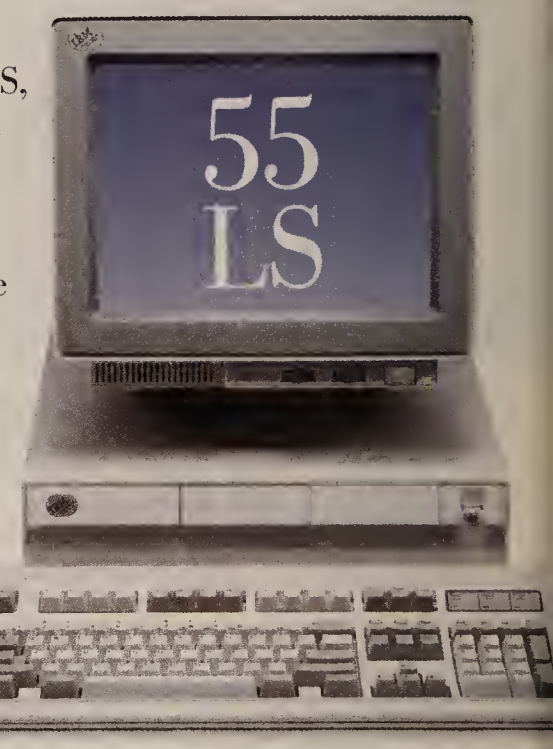
Managers That Turn In A Great Performance.

At the heart of IBM networking are the members of the Personal System/2® family that act as high-performance LAN servers. The PS/2® Model 95 XP 486, IBM's sophisticated new 486™ computer, was especially designed to optimize network performance. The Model 95 features an Intel 33 MHz 486 processor or a 25 MHz 486 processor that's easily upgraded to 33 MHz, which quickens the pace of your LAN's operations. For your network's storage, not only are the Model 95's SCSI hard files lightning-quick, but the overall capacity is truly impressive—up to 1.6 gigabytes internally, and up to 8.96GB or more with IBM PS/2 External Enclosures. IBM also offers highly efficient, lower-cost server alternatives with the PS/2 Models 80 386 and 65 SX. All of IBM's PS/2 LAN servers feature the Micro Channel™ architecture, with its 32-bit data path and bus-mastering capabilities. The Micro Channel busmaster adapters allow you to expand your network's capabilities by adding multiple processors—like adding "computers" to your computer. It all amounts to highly reliable and powerful managers that inspire the same kind of performance from the rest of your network.

An Efficient Way To Bridle Your Data.

Whatever your needs may be, IBM has PS/2s that can serve as excellent client stations. And if you want to keep a tight rein on your network's information, IBM offers the PS/2 Model 55 LS, a medialess LAN station version of the best-selling Model 55 SX. A cost-efficient alternative to models with storage drives, the Model 55 LS provides a wide array of effective management controls, including enhanced data security, consistency in software levels, central software maintenance and central file backup. Not only is the Model 55 LS easy to hook up (it comes standard with a Token-Ring Network or Ethernet adapter), but should you need to modify your system, it's easy to upgrade with diskette and file storage devices.



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Software that hits the ground running—that's our powerful new OS/2® V. 1.3, a high-performance, low-cost software package that supports both DOS and OS/2 clients on either a Token-Ring or Ethernet Network. Both the new OS/2 Extended Edition V. 1.3 and LAN Server V. 1.3 create an environment that delivers improved

to advanced IBM leads the way.

performance, less memory requirements, fewer DASD requirements and support for Adobe Type Manager™ fonts. And with support for 128 DOS requesters, LAN Server V. 1.3 can provide significant cost benefits for DOS network users. Compatibilities between IBM DOS LAN requester and the current version of Windows® 3.0 (LAN Manager 2.0 enhanced) have also been added, capping off the many ways IBM gives you greater flexibility in the LAN environment.

Printing That's The Best In The Field.

For a great finish to any project, IBM offers a full range of printers for client stations, as well as the speedy, large-capacity IBM LaserPrinter, an efficient printing station with immensely attractive LAN benefits. With a high-duty cycle and fewer parts for fewer breakdowns, it offers extremely reliable printing while still boasting a 10-ppm printing speed. The optional paper bins allow for more efficient collation, so there's no need to visit and rearrange the printing station prior to the particular job. You can also easily and inexpensively upgrade to Adobe PostScript.® It all adds up to a range of complete, reliable printing solutions that can handle the kind of workload that any network, large or small, can generate.

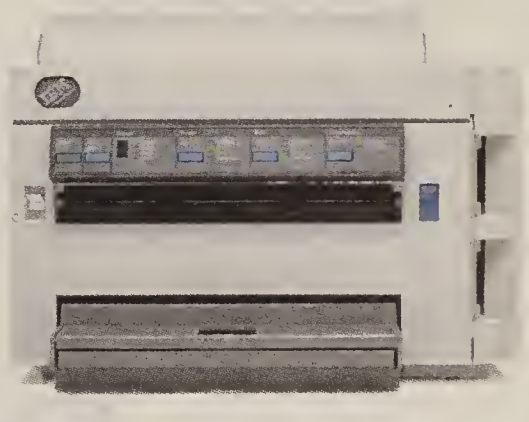
Step Up The Pace With Token-Ring Network.

To optimize the link between your LAN server and client stations, you need a hardware connection that gives you access to departmental and company data, as well as communication with your co-workers—in other words, you need access to a winner's circle: the IBM Token-Ring Network, the winner four years running of the *PC World Magazine* World Class Award. It's a reliable and flexible networking solution, one of the only connections with a data transfer rate of up to 16MB per second.

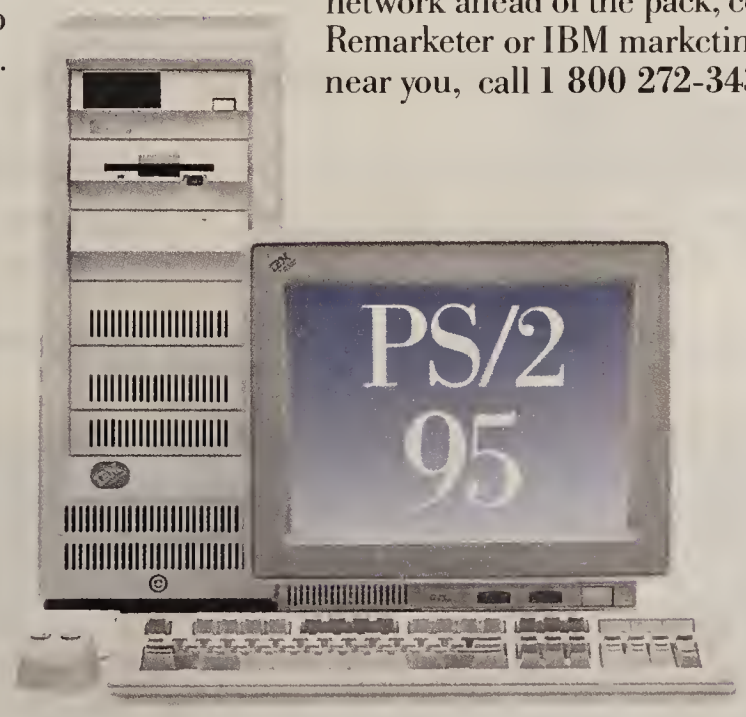
You can also diagnose, isolate and correct problems in one section of your LAN without affecting the rest of your network. A system you can build on, IBM Token-Ring Network provides a reliable connection that's as strong as your need to keep in constant touch with the people and information around you.

Communicate With Horses Of A Different Color.

Of course, IBM provides you with several ways not only to connect your PS/2 LAN to a multitude of mid-range and mainframe systems, but also to communicate with non-IBM systems as well. To conduct transactions such as hotel reservations, car rental and credit card authorization, an IBM communications adapter such as the IBM ARTIC Portmaster Adapter/A busmaster card, with the proper communciations software, can link your PS/2 with other companies' computers. With an Ethernet adapter, you can also connect to most Ethernet LANs. The integrated communications options of IBM OS/2 Extended Edition software can also allow your PS/2 to send mail, transfer files and access applications on other systems concurrently. So it's easy to benefit from the strengths of an IBM network while still having access to the rest of the computing world.



With the many components that constitute a Local Area Network, it's plain to see why a LAN is only as strong as its weakest link. That's why the IBM total LAN solution—LAN servers, workstations, networking software, printing stations and Token-Ring Network—is simply without peer: because there are no weak links. To find out how IBM can keep your network ahead of the pack, contact your IBM Authorized Remarketer or IBM marketing representative. For a remarketer near you, call **1 800 272-3438.**



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Receiving the gift of technology

Firm's strategy targets PC compatibles, feature-rich LANs

BY JOANIE M. WEXLER

S. C. Johnson & Son, Inc. is undergoing a whole re-engineering of its business processes (see story page 1). Company officials say the effort will result in a waterfall of new technologies for the company's information systems staff.

For end users, the company, commonly known as Johnson Wax, standardized last month on Intel Corp. 80386-based personal computers from Dell Computer Corp. and the Microsoft Corp. Windows 3.0 interface. Tim Theriault, who heads up Johnson's end-user computing function, says that with the 150 new PC procurements the company plans to make next year, it will save $300,000 with the Dell platform.

CIO Burden: *SAA, Unix the compelling architectures*

"We can get three Dells for the price of two IBMs, so we're doing more with the same amount of money," he explains.

Unix, SAA in the lead

The firm is currently evaluating running Unix as a desktop operating system. "In the coming years, IBM's Systems Application Architecture and Unix will be the two compelling architectures we will concern ourselves with," adds Laurance Burden, Johnson's chief information officer.

The company also intends to turbocharge its local-area networking strategy by replacing limited-capability IBM Person Computer networks with a more feature-rich LAN platform, according to Theriault.

He notes that Johnson is pilot testing Novell, Inc.'s Netware and Microsoft's OS/2 LAN Manager. However, he says, the company would be open — if it were possible — to running Novell applications over a Banyan Systems, Inc. Virtual Networking Software backbone.

Johnson would like to capitalize on a combination of Banyan's Streettalk global naming service and the myriad business applications available for Novell LANs.

The new LAN strategy is meant to replace Token-Ring IBM PC networks in the administrative area, because the existing networks "have no security, and the speed and network level are inferior," Theriault says. He also notes that each IBM PC network server can accommodate only 10 users.

"In the 1990s," Theriault explains, "the network will be the most critical component for facilitating future applications."

For example, he says, running IBM's Professional Office System (Profs) on an IBM 3090 mainframe "is expensive and not as efficient; there are issues with response time and transparent access."

Theriault adds, however, that "we have to be sensitive to the impact LANs will have on Profs — it's the most important application we have."

Another new technology lurking in the Johnson corridors is the 100M bit/sec. Fiber Distributed Data Interface (FDDI) LAN. FDDI will eventually replace the existing 16M bit/sec. fiber Ethernet backbone connecting Johnson departments in two major buildings at the Racine, Wis., headquarters.

Johnson also says FDDI is on the drawing board for its overseas operations. •

A household name

Following is a summary of Johnson Wax's leading products:

U.S. Consumer Products Division
- Home care: Future, Brite and Klear floor waxes, Pledge and Favor furniture polishes, Glory home cleaner, Shout, Glade room deodorizer.
- Insect control: Raid and Off insect repellents.
- Personal care: Agree and Halsa shampoos and conditioners, Soft Sense skin lotion, Aveeno bath products, Edge shaving gel, Fisher-Price bath products for children.

Worldwide Innochem Division
Commercial and industrial cleaners, floor finishes, disinfectants, soaps and insect and odor control products, specialty chemicals for graphic arts, industrial coatings and adhesives industries

Worldwide Service Businesses Division
Commercial and industrial cleaning, disinfecting and pest-control services

Principal U.S. subsidiaries: Johnson Venture Capital, Inc.; Micro-Gen Equipment Corp. (pest control equipment); Prism (restaurant and hotel sanitation services)

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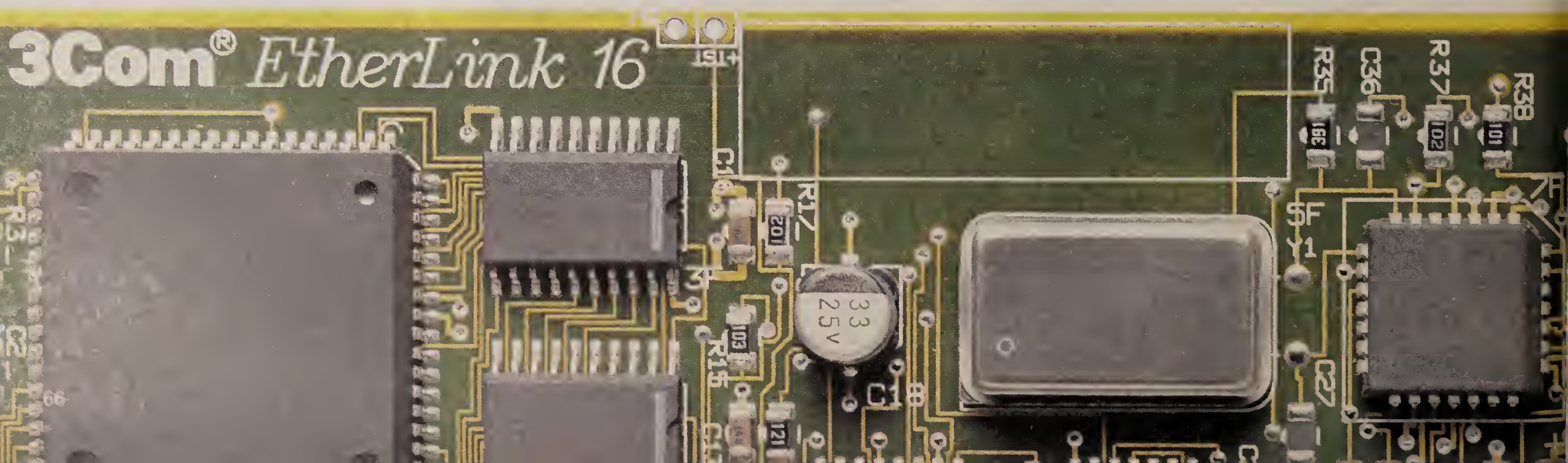

Johnson business units to get financial control

BY KIM S. NASH

The new year is expected to ring in a new financial system at Johnson Wax, and it comes not a moment too soon.

Although executives at the $2.5 billion, 104-year-old privately held firm appear unafraid of the recession talk that now ricochets around Wall Street, it will redesign its accounting system in 1991 to better service its diverse customer markets. By the summer of 1992, Johnson's Consumer Products, Worldwide Innochem and Worldwide Service divisions will no longer share one financial setup.

"It isn't that the current system is terrible, but it's not strategic now that our headquarters has become a virtual holding company for all of our other businesses," explains Mark Eckhardt, information systems director of financial services.

The goal of the Financial Systems Architecture Project (FSAP) is to give each unit control of its own accounting with complete financial environments at the business unit level. Now, each of the three units uploads monthly sales figures, operations expenses and other data to a single Software AG of North America, Inc. Adabas database running on an IBM 3090 mainframe in Johnson's Racine, Wis., data center.

While numbers are crunching, managers in the business units have no on-line access to their own data, Eckhardt says.

After 18 months of meetings with users, planning sessions with Chief Financial Officer Larry Switzer and Chief Information Officer Laurance Burden, Eckhardt says he expects to push FSAP ahead in 1991. FSAP will give each business a separate VSAM-based database that can run on either of Johnson's two 3090s, with user access via personal computers already in place.

We're keeping up, but . . .

Eckhardt denies that Johnson's financial department lags behind others in implementing a decentralized modus operandi, but he points to several areas that could be more strategically configured.

For example, some of the company's statistical analysis activities are just partially automated. When a manager at one of the 47 subsidiaries under the Consumer Products umbrella downloads data from Adabas, he often must manually enter those statistics into his spreadsheet.

Also, Johnson tracks plenty of telling business statistics, such as product-by-product sales comparisons and reports on regional research and development efforts. However, this data is not getting to the right people at the right time.

When FSAP is complete, Eckhardt says, "our managers will be looking at more information that is more accurate, on a timely basis."

Software is the real missing piece in the revamp. FSAP mandates only off-the-shelf packages because they are virtually bug-free and probably cheaper than those developed in-house, Eckhardt says.

After reviewing 30 financial packages, he whittled his list down to three vendors: Dun & Bradstreet Software, American Software, Inc. and Global Information Systems Technology, Inc. A final decision is due in early 1991. Johnson will customize the packages very little because, Eckhardt says, "we would rather change the way we do business than drastically modify any technology we may buy."

In some cases, new policy will improve work flow more than new software might, he notes. Specifically, Eckhardt wants to exploit Johnson's existing international Ethernet network by piggybacking financial data, such as treasury and loan information, atop regular monthly accounting numbers sent from international offices.

The subsidiaries currently send this data to headquarters on paper — data that Racine personnel must cross-check manually, a tedious, time-consuming job, he explains. Transmitting this information electronically would eliminate many errors and allow each unit to officially close its monthly books sooner.

Johnson's Eckhardt *says current financial system is no longer strategic*

Because final executive committee approval for FSAP deployment is not due until the end of this month or early next, the company will not project what bottom-line benefit or productivity gains it expects from FSAP. Eckhardt says, however, that the project's goal of simpler, more flexible finances that would allow more managers more access to data can only promote better decision-making. •

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Database kills paperwork dead

Regi electronically tracks firm's product regulatory progress

BY KIM S. NASH

What do Africa's tsetse fly, Australia's bush fly and the American house fly all have in common? Besides being pesty at the family barbeque, these bugs are all vulnerable to a spray product: Raid.

Insect control products are Johnson Wax's most profitable business, but the product line itself is vulnerable. Because marketability of insecticides is strapped to environmental restrictions, "green" movements can be cause for concern at Johnson.

It is no coincidence that Johnson went live last month with a new $50,000 object-oriented database that tracks products as they weave through the environmental registration procedure. The Regi database (short for registration) will cut the work load of Johnson's regulatory affairs department by as much as 50%, says Annette Oleson-Wiles, information systems manager of knowledge engineering.

"Our registrations people are dying under paper," Oleson-Wiles says. Much of that paper is a by-product of the registration process that the U.S. Environmental Protection Agency (EPA) mandates for every new consumer product. State and local laws increase the paper deluge because they are often stricter and more complex than EPA rules.

Built on an expert system shell from Aion Corp., Regi automates the legal checks involved in manufacturing and selling chemical products. Regi tracks Johnson's goods through Byzantine state and federal registration processes, while allowing different departments to retrieve custom information.

The marketing department, for example, can ask for information about which states have approved a product and which have not. The state regulations group, meanwhile, can use Regi to prepare applications based on preprogrammed or customized criteria.

Before Regi, Johnson stored EPA and state data in different repositories on different computers. People could not easily find out where a product was in the cycle at any given time, Oleson-Wiles says. Now, all such data is housed at one easily accessible location.

Although Regi currently runs on IBM's SQL/DS from an IBM 3090 mainframe, Oleson-Wiles anticipates migrating the system to DB2 on Johnson's MVS mainframe within six months.

The EPA and local agencies can deny a new product for any of several clerical reasons, including a discrepancy in wording between the final and initial applications, Oleson-Wiles explains. The EPA requires that product labels, for example,

Johnson's Oleson-Wiles: *"Our registrations people are dying under paper"*

convey the same idea that was originally registered. There is a subtle but important difference, she says, between claiming that a product "kills bugs faster" and saying that it "kills bugs twice as fast."

By cross-checking such data, Regi can warn appropriate departments of any problems early in the process. Previously, if a mistake escaped the eyes of Johnson's registration personnel, it was not discovered until the product application came back rejected.

No competition

A registration delay "can put us out of the competitive picture," says Roger Grothaus, who supervises state and EPA product registration as Johnson's vice president of scientific support and government affairs.

Regi will eliminate clerical errors and increase Johnson's first-try registration acceptance rate to between 90% and 100% within a year, Grothaus predicts. "That means we get our products on store shelves that much faster," he says.

Johnson's business units abroad have already requested copies of Regi, says Ted Derse, director of corporate business systems, who oversees Oleson-Wiles' knowledge engineering group. Because of the database's generic framework, going on-line in foreign locales will take just 10% of Regi's original five-month development time, Oleson-Wiles estimates.

"The guts of the system are transparent. Local offices would only have to plug in local regulations," she says. However, she doesn't expect international rollout until 1992, "when it has been put to the test of all-out daily use." •

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Second quarter, second place

Shareholders resoundingly approved the $6.2 billion deal last week that will merge **Contel Corp.** and **GTE Corp.** into the second largest U.S.-based mobile/cellular telecommunications company, trailing only **McCaw Cellular Communications, Inc.** The firms anticipate a second-quarter 1991 closing.

Spreading the wealth

IBM has targeted nine U.S. communities where its employees are concentrated as recipients of a $3.5 million fund that will go to finance 21 child-care and elder-care centers, the company announced last week. The investment will be drawn from the $25 million IBM Dependent Care Initiatives Program announced last year.

In new hands

International telecommunications holding company **Bellsouth Corp.** is out of the leasing business — at least in the U.S. The Atlanta firm's U.S.-based equipment leasing portfolio, formerly held by its **Dataserv** subsidiary, is now in two new sets of hands: The data processing and check-sorting equipment leasing business was sold to **Meridian Leasing Corp.**, while **Sanwa Business Credit Corp.** bought the point-of-sale equipment leasing business.

Declaring independence

On-line transaction processing systems vendor **Stratus Computer, Inc.** planted a not-for-sale sign in its Marlboro, Mass. front yard earlier this month. The firm said its new shareholder rights plan, aimed at staving off hostile takeovers, was not adopted in response to any known acquisition attempt. The plan's adoption puts Stratus in yet another growth business: Some 1,300 U.S.-based firms, including many in the computer industry, have now enacted so-called "poison pill" provisions.

Shrinking deficit

At least, so says the **American Electronics Association** (AEA). Based on trade results through the third quarter of 1990, the AEA projected that the U.S. electronics trade deficit with the rest of the world will shrink 80%, from 1989's $9.6 billion figure to $1.9 billion at the end of the current year.

Picturetel prospers in tough times

BY NELL MARGOLIS
CW STAFF

PEABODY, Mass. — After six years of hard work and crossed fingers, Picturetel Corp., one of the nation's two publicly held firms devoted solely to producing videoconferencing equipment, is an overnight sensation.

A combination of technological foresight and managerial insight, according to analysts, has landed the 1964 brainchild of two MIT students — a firm that was forced to go public to raise its start-up fund when venture capitalists wrote it off as too risky — squarely in the right place at the right time:

- Technological advances have enabled the firm to offer conference-quality video at affordable prices (see story below).
- Long-distance telephone carriers have plugged into the teleconferencing services market through alliances with equipment providers — AT&T's marketing partnership with Picturetel, for example — blessing and driving the videoconferencing systems market in the process.
- Industry standards continue to increase domestic and international connectivity, allowing for expanded service at economy of scale-enabled price breaks.
- The current recession and the threat of an imminent oil crisis are adding urgency to the already felt need for an alternative to business travel.
- Picturetel and San Jose, Calif.-based Compression Labs, Inc. are the only major independent contenders in a market that analysts see as sustaining annual growth in the 35% ballpark for at least the next few years, to an estimated $600 million by 1995.

Three years ago, said John Mulcahy, vice president of information systems at Dun & Bradstreet Software, McCormack & Dodge, the Natick, Mass.-based firm he then served, looked at Picturetel "and found the systems too slow and too expensive." M&D gave it a pass. One year later, Picturetel broke through the price and quality barrier.

Last spring, in the wake of M&D's merger with Atlanta-based Management Science America, Inc., the firm — faced with dual headquarters, executives commuting between Georgia and Massachusetts and a critical need to make instant colleagues out of potentially warring work forces — signed on for two full videoconferencing systems, each supporting external document cameras.

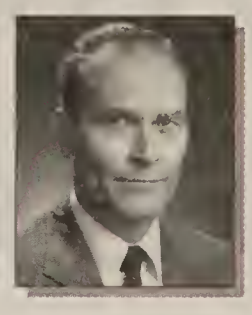
"This doesn't just let us conduct our business more efficiently or economically," Mulcahy said. "It also lets us accomplish things that would simply be impossible otherwise."

"This is a real watershed time for Picturetel" said Chief Executive Officer Norman E. Gaut, a veteran computer industry entrepreneur who founded, grew and sold his own firm before taking over the helm at Picturetel in the fall of 1985.

Gaut said industry history has taught him that when a firm has one foot firmly on the skyrocket trail, the other is likely to be on a banana peel. With one factor after another breaking his company's way, Gaut is treading very carefully on both technological and corporate grounds.

Continued on page 77

Up and Coming: *Picturetel Corp.*



"Our biggest danger would be losing our focus. What we've got to do is use lots of third-party alliances, focus on the core technology and drive, drive, drive."

- **Location:** Peabody, Mass.
- **Incorporated:** 1984
- **President:** Norman E. Gaut
- **Employees:** approx. 185
- **Product line:** software-upgradable videoconferencing systems

HVQ method lets Picturetel realize a dream

Six years ago, MIT students Brian Hinman and Jeff Bernstein took a look down the decade and saw folks communicating face to face over the phone. Their vision was simple, elegant and even technologically feasible. It just wasn't time yet. High-quality, lifelike video images could be transmitted only at prohibitive prices via satellite; affordable transmission meant degraded reception.

Like novelist Ray Kinsella's baseball fan, Hinman and Bernstein got the message: "If you build it, they will come." The two carved out their own field of dreams: Picturetel. And "they" came: the technology, the financiers, the customers and, as of early autumn, the profits. What they came for was a videoconferencing system that works over dial-up digital or private networks for basically telephone call prices.

Picturetel attacked the resolution/expense conundrum by developing an image compression technique called Hierarchical Vector Quantization (HVQ). Video compression is the ability to reduce the amount of information needed to store or transmit a video image. This addresses the dollar side of the equation, since reduced transmission requirements mean lower costs. HVQ tackles the resolution issue as well: By coding images according to resolution level, it renders compression-driven distortions less visible. Picturetel's 1988 introduction of the C-3000 Video Codec (short for coder-decoder) — which compresses signals, decodes them and lets them be carried by ordinary telephone lines — "catapulted the company from obscurity to contender status," said Tucker, Anthony analyst Herb Maher.

The firm commands some 75% of the low-bandwidth videoconferencing market, analysts said. Customers can buy full systems, all operative on a phone line, starting at $34,000; alternatively, it will also sell you a codec and let you tailor your own system.

NELL MARGOLIS

Report hits Navy on use of IBM gear

BY GARY H. ANTHES
CW STAFF

WASHINGTON, D.C. — A report detailing the results of a two-year congressional investigation blasted the U.S. Navy for its computer procurement practices but found IBM generally blameless in a tangled web of charges of fraud, abuse and anti-competitive bias.

"Through a combination of agency malfeasance and the dominance of [IBM], the fair and open system contemplated by Congress has been torpedoed in Navy [automatic data processing] procurement," the report said.

The House Government Operations Committee said the Navy has shown a systematic and illegal bias in favor of IBM in its procurement of mainframe computers. It also said the Navy has acted unethically and illegally in accepting gratuities and free training from IBM, some of whose employees coached Navy personnel in writing procurement specifications when those personnel were seeking bids for IBM or compatible equipment.

"The Navy cooperated fully with the committee during the course of the hearings and will implement any actions deemed appropriate to ensure that all ADP procurement is conducted fairly and in accordance with all laws and regulations," a Navy spokesman said.

"IBM appears, for the most part, not to be responsible for the bizarre Navy ADP acquisition system but merely its willing beneficiary," the House committee concluded.

A spokesman for IBM said the inquiry had turned up no evidence that the firm had acted unlawfully or unethically. "We consider the matter closed," he said.

The report had little to say that had not already been made public, but it did make several new recommendations. Among them was that the U.S. General Services Administration, which oversees federal computer buys, should undertake an immediate review of the training offered to the government by computer firms and contractors to determine whether it is suitable for attendance by federal employees.

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Patent rights getting much tougher to protect

BY MAURA J. HARRINGTON
CW STAFF

SAN JOSE, Calif. — Patent rights have become increasingly difficult to protect in the computer industry, with more complex issues ahead in the 1990s, said Semiconductor Industry Association Director of International Trade and Government Affairs Daryl Hatano at the American Bar Association's recent annual fall meeting.

Although semiconductor companies can spend millions in litigation fees to protect their intellectual property rights, the investment makes for firms that are less inhibited when it comes to inventing new products — which means better products for end users, Hatano said.

Speaking specifically about the semiconductor industry, Hatano said that although increasing competition from Japan — and, soon, from Europe — has made it more difficult for U.S.-based companies to protect their patents, more firms than ever are turning to patents, copyrights and other means of protecting their intellectual property.

The semiconductor industry's annual revenue is currently around $50 billion and is expected to grow to $75 billion by 1993, Hatano said. Semiconductor companies account for almost 20% of the electronics industry, which today is a larger manufacturing employer in the U.S. than the auto, steel and aerospace industries combined, he said.

Thus, Hatano added, with about 10% of its annual revenue spent in research and development in this tighter, more competitive and more global market, the semiconductor industry has a compelling need to protect its intellectual property. In addition, Hatano said, semiconductor firms today face some of the following issues:

• Control of patents and copyrights — which are more common modes of protection for software — after products are shipped outside the U.S. This is a big problem in Thailand and South Korea, where there are no specific laws in place to protect intellectual property, according to Lee Green, an attorney at the Washington, D.C.-based law firm Baker & McKenzie.

• Niche-specific questions, such as whether software applications that help a semiconductor manufacturer maximize space on a computer chip nullify that manufacturer's patent. The question has been posed, Hatano said, because if the computer is doing all of the work mapping out the design of the chip, the likelihood that it will pick the same design for more than one computer-aided design user is very high, thus posing patent protection rights questions.

• Reverse engineering. Part of the reverse engineering technique involves photolithographic technology, which is the method of peeling off the chip layer by layer and photographing it to see how it was put together. While the method is legal, the right to reuse the knowledge gained from this technology is questioned.

Should this method be used in research and development? The issue is still unresolved, Hatano said.

Ask watchers still in dark

BOSTON — A corporate road show billed as the event at which Ask Computer Systems, Inc. would answer the burning question of exactly how it plans to play newly acquired Ingres Corp. left analysts largely underwhelmed earlier this month.

Ask founder and Chief Executive Officer Sandra Kurtzig and Ingres Products Division Vice President Marilyn Bohl, a former IBM developer credited with the development of DB2 and the only Ingres executive to remain at Ask after the acqiusition, were generous with overarching goals but came up short on implementation strategy details.

Armed with Ingres, Kurtzig said, $4-million Ask will move beyond its role as a business and manufacturing applications provider to become a leader in software development targeted at client/server computing. To achieve its goal, she said, the merged company will leverage two strengths: a talent for partnership and the ability to derive more than half of the bottom line from international operations.

"We don't know anything now that we didn't know before, and some of the omissions are disconcerting," said Charlotte Walker, an analyst at Labe, Simpson & Co. Still among the missing, Walker noted, are specifics regarding Ask's plans for reconciling Ingres' and Ask's disparate accounting methods; the role that $60-million equity investors Electronic Data Systems Corp. and Hewlett-Packard Co. will play in Ask's assault on the client/server market; and how Ask intends to overcome the marketing deficit that dogged Ingres as a database and tool vendor and that, in Kurtzig's words, "had sushi and marketed it as raw fish.

NELL MARGOLIS

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Picturetel

CONTINUED FROM PAGE 73

"The biggest thing we have to avoid right now is losing focus," he said. "What we've got to do is use lots of third parties, focus on the core technology, and drive, drive, drive." Gaut is also resolved to resist the temptation to ride the technology and let the corporate side slide.

"As soon as a company grows beyond what I call the shouting limit — that 50-60 people size where when you shout, everyone can still hear you — corporate processes have to come into the picture," Gaut said. Corporate infrastructure becomes more critical, he added, when a firm reaches "that second plateau: the one around the $15 million to $20 million mark where technology is no longer dominant, and you realize . . . you've actually got to *sell* that son of a gun."

Gaut places Picturetel at the third plateau: "the stage at which so many companies stall out because they're the captives of their founders."

These traps will not snag Picturetel if Gaut can help it. When the company moved to the second plateau, Gaut replaced its chief financial officer, "who was very talented but inexperienced," with current CFO Joan Nevins, who came onboard armed with big-company experience. A similar switch brought in a new head of sales and marketing, Rob Mitro.

Gaut sees two signs that he made the right moves: the success with which both new appointees are meeting and the fact that both of their predecessors remained with the firm. "Nine times out of 10," he noted, "people will walk when someone is brought in over them." A third endorsement is coming from analysts, several of whom said that Picturetel's management depth bodes as well for the firm's future as does its flashy and timely technology.

"So many companies stumble at that $100 million mark," said Herbert R. Maher, an analyst at Tucker, Anthony in Boston. "Picturetel is only at $36 million, and Norm Gaut's already thinking about how to avoid the pitfalls; that strikes me as very encouraging."

Analysts also find it encouraging that the Picturetel management team is keenly aware that no free or easy ride lies ahead. Last quarter, the firm lowered one red flag when it posted its first profit on quarterly revenue, up 116% year to year. However, increasing attention focused on the videoconferencing market is bound to mean escalated competition — particularly from Japan. A slowdown in the development of its next generation of product or the inability to market them at an attractive price could prove anything from damaging to devastating.

Today, the firm that could not scare up a venture investor is 65% owned by a group of them that includes Kleiner, Perkins and Accel Partners, an ownership structure that provides not only funding, but also a hedge against uninvited acquisition. Japanese partner Kyocera also has a 6% stake in the firm.

INTERNATIONAL BRIEFS

Venture capital city

According to a recent report out of Taipei, the **Taiwan government** plans to boost its fledgling venture capital market with an infusion of at least $59 million during the next several months. The state-run **Bank of Communications** plans to use the venture capital fund as seed money to help start a handful of new venture capital funds, many of which will be targeted at the country's information industry.

European software sales rising

North American software firms' third-quarter 1990 European sales jumped to $229 million, 63% over 1989 figures for the comparable period, the **Software Publishers Association** (SPA) announced earlier this month. This compares with a second-quarter 48% growth rate, which varied from country to country, according to the SPA report. The German software industry is not faring very well internationally, according to a recent study by Paris-based corporate consultants **Pierre Audoin Conseil**. A preference for remaining small and independent at a time when their counterparts in other countries are focusing on mergers and acquisitions made German suppliers a no-show in Audoin's listing of the top 30 internationally strongest software firms, Audoin said. The study showed that **U.S.** suppliers are dominating the worldwide software and services sector. Led by **Electronic Data Systems Corp.**, with $2.48 billion in worldwide revenue, U.S. firms held the top six spots. France's **Cap Gemini Sogeti** ranked seventh; Germany's largest vendor, **Datev**, entered the ranks at a distant No. 36.

Slow boat to Hong Kong

IBM workstation users in Hong Kong are complaining about a string of late deliveries of the **RISC System/6000** since its release last February. "It's an open secret that IBM cannot meet the demand for the RS/6000 in Asia," one Hong Kong source said. In an official statement to *Computerworld Hong Kong*, IBM acknowledged "some shipment delays, due to a shortage of certain elements of the system" but noted that the situation is now "very much back to normal, and that the delays had no impact on sales."

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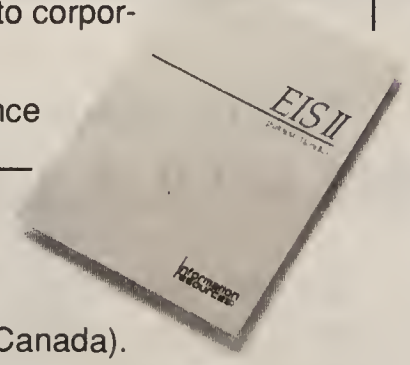

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*David W. DeLong, co-author of "Executive Support Systems: The Emergence of Top Management Computer Use."

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Think twice before taking that 'perfect' job

Keep your career on track by changing positions only after careful thought and strategic planning

BY JANET RUHL
SPECIAL TO CW

What does it take to destroy a promising information systems career? Not much, say recruiters who specialize in placing IS personnel. As your career matures, a bad job decision can reduce your long-term employability and diminish the value of the experience you have built up over the years.

The most common blunder IS professionals make is to look at the short term rather than the long term. Short-term thinkers tend to focus on the money, the immediate technology or something else rather than stepping back and looking at the future.

Tempted by high salaries, experienced professionals may take jobs that represent career dead ends, says Mark Jacobs, a senior consultant at Data Pros in East Hartford, Conn.

For example, a DB2 specialist whom Jacobs worked with a few years ago turned down an offer for a database administrator job in favor of a consulting position because the latter paid $2,000 more per year. After two years as a consultant, she decided to return to the DB2 job market.

However, because the consulting position did not involve any work in DB2, Jacobs' client found that her skills were severely out of date. Had she taken the lower paying DB2 position and built on her previous skills, she would have qualified for jobs paying $10,000 more than her current salary, he says.

IS professionals also shortchange themselves by choosing positions that take them away from technology. Recruiters advise IS professionals to avoid jobs in user liaison and quality control particularly unless they are interested in a career change.

Even an alluring management position can end up being a dead end as far as an IS career is concerned if the new manager isn't involved in the technology issues, says Bob Hildreth, president of Electronic Systems Personnel, Inc. in Minneapolis.

On the other hand, Hildreth warns, focusing too heavily on the technical end can backfire if the person gets "pigeonholed in a language or tool that gets outdated."

Another career trap IS veterans fall into is what David Kirk, a recruiter at Dunhill Professional Search of Charlotte, Inc. in North Carolina, calls unrealistic expectations. IS people fail to understand that real career advancement becomes increasingly harder as they move up the ladder and away from entry-level positions, he says.

Yet many professionals erroneously assume that the rapid promotions and large salary increases of their early years will continue indefinitely.

Many professionals whose salaries are already in the $40,000 range unrealistically hope to move to the Southeast, for example, and receive hefty raises, ignoring the reality that most IS salaries in this region tend to be in the low thirties, Kirk says.

Keep your eyes open

Playing the job hunting game too safely and failing to recognize opportunities as they present themselves is another common stumbling block in the path of IS professionals.

Many people turn away from rare opportunities because they perceive them as risks, Jacobs says. He also finds that too often, people are looking to make a career move in companies that already have all of the technology "toys" and are unwilling to consider positions with smaller companies.

> EVEN AN ALLURING management position can end up being a dead end as far as an IS career is concerned if the new manager isn't involved in the technology issues.
>
> BOB HILDRETH
> ELECTRONIC SYSTEMS
> PERSONNEL

But the most disastrous mistakes IS professionals make today are in the actual interviews for new positions, recruiters say.

Unfortunately, many IS job candidates have experienced a sellers' market earlier in their careers, and they do not realize that they have to sell themselves in today's tougher business climate, Jacobs explains. During the 1970s and the early- to mid-80s, when IS opportunities were plentiful, IS people relied exclusively on their technical abilities to clinch a job, Hildreth says.

Today, however, if a job candidate is asked a question such as, "Do you have DB2 experience?" the candidate must use this opportunity to describe in detail the kind of work he has done with that technology, Jacobs says.

To prepare for this "new" kind of interviewing, Hildreth suggests that IS professionals review the relevant technology, learn what the company does and practice role playing.

Another interview mistake IS professionals make is to grill the interviewer on the salary and benefits of the position. This aggressiveness gives the interviewer the overall impression that applicants are interested only in what the company can do for them, not what they can do for the company.

Other candidates destroy their chances for getting a job by spending the interview dwelling on the things they disliked about previous jobs, communicating a negative attitude to the interviewer.

In today's ultracompetitive world, IS professionals have a lot to protect on their path to the top: They have to keep a clear eye on their goals, watch for unrealistic expectations and guard against complacency.

But most of all, job seekers should beware of the glitter: It's not always gold.

Ruhl is a consultant and programmer in Connecticut and author of *The Programmer's Survival Guide: Career Strategies for Computer Professionals.*

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Senior System Software Engineer, OS/2 Group. By January 17, 1991 please send resume to: Employment Security Department, ES Division, Att: Job # 240327-K, Olympia, Washington 98504. Job Description: Designs, implements and tests complex and high level systems and software for micro computers. Works with other engineers to design and coordinate automatic test designs and procedures and debugging for OS/2 kernel and file system operating system utilizing "C" and Assembly languages. Will work with 32-bit computer. Assumes major project responsibility including 1) requirements and analysis of project specifications; 2) product design; and 3) implementation schedules. Two positions available. Requirements: Master's Degree in Electrical Engineering, Computer Science, Physics, or Mathematics. Six months of work experience in computer design or programming utilizing OS/2 or MS-DOS and XENIX or UNIX operating systems, "C" and Assembly languages and 32-bit computer and in reviewing C code. 20 course hours in designing and developing automatic test cases and debugging for operating systems. Must have legal authority to work permanently in the United States. Job location: Redmond, Washington. Salary: $37,500-39,000 per annum, depending on experience. 40 hours per week, flex time. EOE

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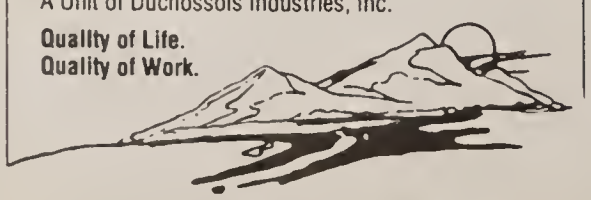

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Senior Systems Analyst; 40 hrs./wk.; 8 am-5 pm; $38,000/yr; Job requires: Master of Business Administration OR Master of Arts OR Master of Science degree in Computer Science OR Management Information Systems AND 1 yr. experience as a Programmer-Analyst. Job also reqs: 1) Exp. must include exp. using Unisys A & Unisys B series computers; & 2) Exp. must include exp. using GEMCOS & COMS communication systems, DMS II software, & COBOL, ALGOL, PASCAL, & PL/M-86 computer languages. Special reqs. 1) & 2) may be met concurrently during the same 1-yr. period. Job duties: Analyze distribution information & manufacturing information systems for a variety of corporate clients. Design, develop & implement computer software to more effectively satisfy customer needs using Unisys A series mainframe computers & B series microcomputers, GEMCOS, & COS communication systems, DMS II software & COBOL, PASCAL, ALGOL, & PL/M-86 computer languages. Qualified applicants should send resume & verification of reqs. to: 7310 Woodward, Rm. 415, Detroit, MI 48202. Ref. #92290 . Employer Paid Ad.

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- Experience in 8086 Assembler language desirable;
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Patent laws protect creative development

Editor's note: Legal eye is a monthly column exploring legal issues and their impact on information systems.

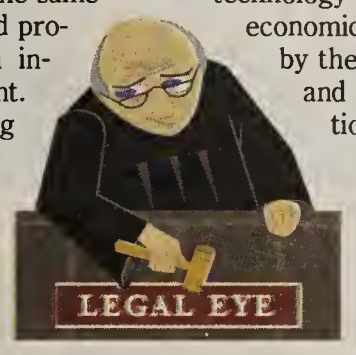
BY RAYMOND T. NIMMER
SPECIAL TO CW

Copyright laws directing the software development industry for the past decade are taking a bow to a more powerful maestro: patent laws. And IS managers who oversee all new product development cannot afford to turn a deaf ear to the changes because the stakes are too high.

First, an IS manager should understand the differences between copyright and patent laws. Copyright prevents anyone from copying someone else's creative work, but patent law goes further. Patents make both copying and independent development equally prohibited.

For example, if one of your developers designs a software tool that optimizes how data is moved around in a particular environment, and your company patents that approach, another developer cannot use the same process without your company's permission — even if the second developer never saw the original invention.

Unlike copyright laws, patent laws protect the technology, not the code. They cover how the software directs the computer to perform. As a result, even if the computer uses entirely different code, a program that handles data in essentially the same way that a patented program handles data infringes on the patent. Merely refurbishing or fine-tuning the code or design may not bring the new program out from within the scope of the valid patent.



To obtain a patent, a company must file a claim for a specific invention. However, even if an invention requires substantial work and has great commercial value, no patent will be issued unless the invention reflects sufficient originality. That is, the invention should not be one that is obvious to another person skilled in the same technology.

During the patent application stage, a company or developer must describe how best to perform the invented procedure. Then, if a patent is issued, this description is made public in the patent files for anyone to reference.

Patent disclosure is a major benefit to individual companies and the software development industry. Disclosure laws give the inventing company a reason to reveal technology that it might otherwise conceal from others.

On the flip side, however, patent holders gain rights to exclude all others from using the technology they develop. The economic incentives created by the law can be strong and focused on innovation of a high order.

A major problem with the rise of software patents is that the patent examiners lack a comprehensive base of prior software innovations against which to compare a new claim. How can examiners determine whether a patent claim is obvious if they don't have a strong base of software invention patents to draw from? Unfortunately, software has not been developed against a background of patent protections, and many of the most innovative software systems have been designed, implemented and modified without any organized record.

This problem may soon be alleviated by the current overall shift to stronger software patent laws. At some point in the future, these rules are going to dictate or structure how software development occurs. This will be a fundamental change in the way software is created. Rather than an open field, it will become much more structured.

Specific differences between what we have now and a stronger patent rights system include the following:

- Companies will have to support the costs of the patent application system, requiring legal services to pursue the application and financing to bring it to a conclusion. The costs vary but are always an added factor requiring a greater investment than for copyright. Also, obtaining a patent takes a long time during which it will not be clear whether the application will succeed.
- Patent rules protect technology and methods. This protection runs counter to the status quo, in which new developments historically come from additive development and adaptation, rather than from breakthrough "grand insights."
- Patent rights do not permit an independent development defense. Once granted, the patent holder owns rights to preclude anyone from using the patented process. This may reduce independent, diversified development of software. It represents a change that contradicts what many believe to be the strength of the industry: its diversity and its flexibility.
- Patent protections encourage companies with the resources to collect numerous patents and enter cross-licensing agreements with other patent holders. Measured against existing industry practice, this creates another change. It moves away from laws that favor small companies and entrepreneurs to ones that favor resource-strong companies.

> UNLIKE copyright laws, patent laws protect the technology, not the code.

Patent laws are taking hold of the industry and are here to stay — for a while, at least. IS managers who know the laws and their ramifications will be that much more ahead of the game. Unfortunately, in the case of patent law, ignorance is not bliss.

Nimmer is author of *The Law of Computer Technology* and is a Leonard Childs Professor of Law at the University of Houston.

The BoCoEx index on used computers

Closing prices report for the week ending December 7, 1990

	Closing price	Recent high	Recent low
IBM PC Model 176	$375	$450	$200
XT Model 086	$500	$550	$450
XT Model 089	$550	$625	$400
AT Model 099	$650	$975	$500
AT Model 239	$875	$1,025	$750
AT Model 339	$925	$1,100	$900
PS/2 Model 30-286	$1,100	$1,300	$1,025
PS/2 Model 60	$1,500	$1,800	$1,400
PS/2 Model 70P	$3,425	$3,450	$3,175
Compaq Portable II	$900	$1,050	$875
Portable 286	$1,100	$1,450	$1,000
SLT 286	$2,500	$2,625	$2,000
Portable 386	$2,600	$2,800	$2,500
LTE 286	$2,000	$2,100	$1,850
Deskpro 286	$1,000	$1,200	$975
Deskpro 386/20	$2,900	$3,100	$2,400
Apple Macintosh Plus	$750	$975	$700
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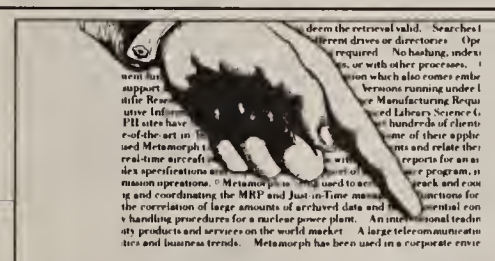

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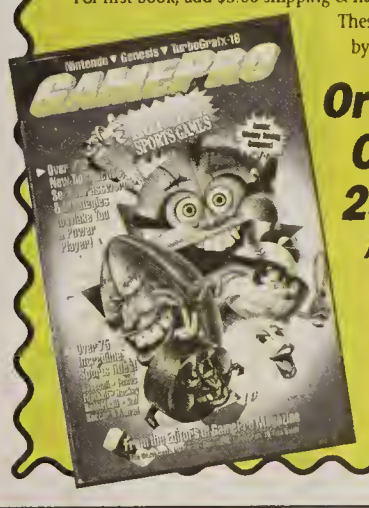

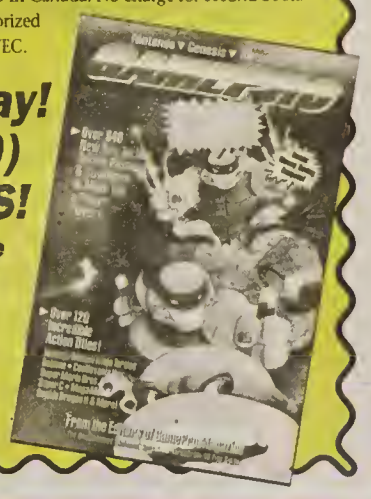

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The great videotape debate

Used properly, video cameras can save firms time, effort — and money

BY JESSICA KEYES
SPECIAL TO CW

Francis Ford Coppola or Steven Spielberg they will never be. But information systems training instructors can dazzle dull technical training classes by adding one of the 20th century's oldest presentational props to their bag of tricks — the video camera.

Video cameras, already available from most companies, are relatively cheap (a standard VHS model can be purchased for about $699), portable and easy to use. And the ultimate output, the videotape, is inexpensive to reproduce (about $3 per tape), saves time and money and is aesthetically stimulating to the viewers.

No personal contact

The most serious drawback to videotaped presentations is the lack of interaction between the viewer and the medium. A trainee can't just stop the tape and ask it a question. Thus, the trainer must decide what topics and in what instances videotape would be the best choice for training.

The following is a guideline of suggested uses for employing the video camera as a technical training tool.

• **Record "live" or instructor-led training sessions.** This tactic is especially helpful if the topic happens to be highly specialized and technical or if the training session involves a guest speaker who may not be available at another time.

Also, if the topic is presented in much the same way every time, a videotape can let instructors avoid having to repeat training classes. Recording the session will save the instructor time and the company money. However, trainers must take care that the topic is not one that will frustrate the trainees if there is no interaction.

• **Develop a "how-to" training video series.** A large percentage of training budgets is allotted for introductory courses of a how-to nature. But by videotaping subjects of an elementary, redundant nature, companies can actually save money to put toward more advanced technical training. For instance, videotapes could be made on subjects such as building a local-area network, configuring a personal computer or learning about DOS.

The process of developing a how-to videotape series is simple, but it does require some planning. To produce an effective how-to video, the trainer should spend some time writing an outline of the points to cover and the actions to take during the taping. This procedure is known as creating a storyboard, a term derived from the filmmaking industry.

For example, if a manager is developing a video on how to use a PC, he might create a storyboard as follows: a shot of a computer with a voice-over giving an introduction, then a shot of a person walking over to the computer and turning it on, with a voice-over explaining the term "boot up."

• **Train new employees more effectively.** Training new employees on specialized in-house systems is often given a broad-brush treatment. After all, it's not very exciting to train new insurance agents to use a life insurance underwriting system, for example. Video training can provide an affordable — not to mention lively — alternative.

This solution can also apply to training all company employees on a new custom-developed in-house system. Rather than trying to coordinate several live training sessions, employees will have the flexibility to watch an introductory tape at their convenience.

• **Produce high-tech multimedia extravaganzas.** For complex training requirements, a few extra ingredients can be added to the video training recipe. Many training classes make extensive use of visuals to clarify points as well as add pizzazz. A simple technique is to develop graphics on a PC and videotape the screen.

> RATHER THAN trying to coordinate several live training sessions, employees will have the flexibility to watch an introductory tape at their convenience.

However, this is a tricky process: Even good cameramen can't always find the right lighting to prevent glare on the screen. One solution is to use an add-in conversion board, which costs less than $600.

This board will translate the IBM Video Graphics Array-compatible output to the National Television System Committee standard for television and will permit the computer to be linked directly to a video cassette recorder.

One problem with this technique, however, is that voice has to be added to the tape later.

• **Capture live presentations and meetings.** What do managers do if they've hired a prestigious consulting company to study an important strategic technology issue, and it's coming on-site to expound on its solutions? Managers want their whole staff to hear their eloquence, but half of them cannot attend. The answer, of course, is to videotape it.

Videotaping of important presentations and meetings serves as extremely valuable training material. Dispatching a staff member with a pen and pad just isn't sufficient to capture the gist of these important events.

While videotaping is definitely not a panacea, nor is it the perfect way to train, it is a viable option for managers to add to their collection.

Keyes is president of New Art, Inc., a management and computer consulting firm in New York.

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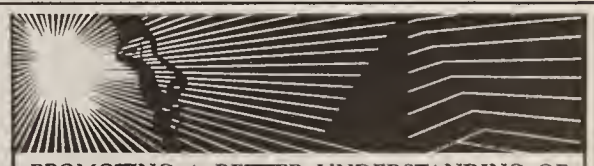
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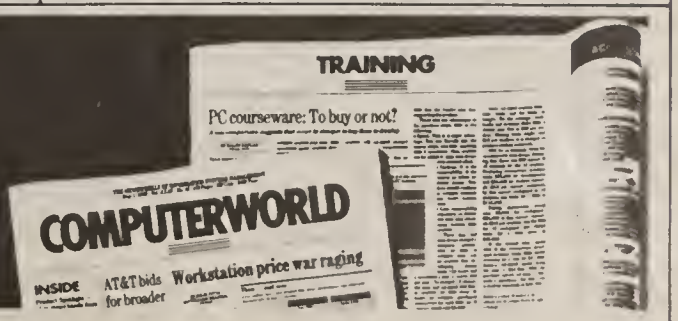

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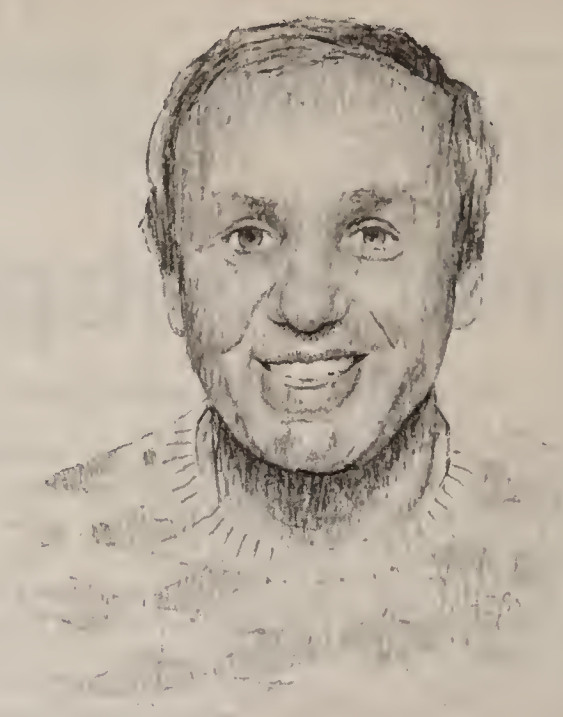

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BRAZIL: Ney Kruel, Computerworld do Brazil Ltda, Praca Floriano, 19/26 Andar, 2031 Rio de Janiero, RJ Brazil. Phone: (011) 55 21 240 8225. Telex: (391) 21 30830 BR. **Sao Paulo:** Computerworld do Brazil Ltde., Rua Joaquim Floriano, 488/3 andar-CEP 04S34, Sao Paulo, Brazil. Tel: (011) 55 11 852 8536. Telex: (391) 1132017 (WORD BR).

COLOMBIA: Heli Abel Torrado, La Nueve Ley, Computerworld-Columbia, Transv. 23 No. 58-28, Apartodo Aereo 54018, Bogota, O.E. Columbia. Tel: (011) 57 248 9010.

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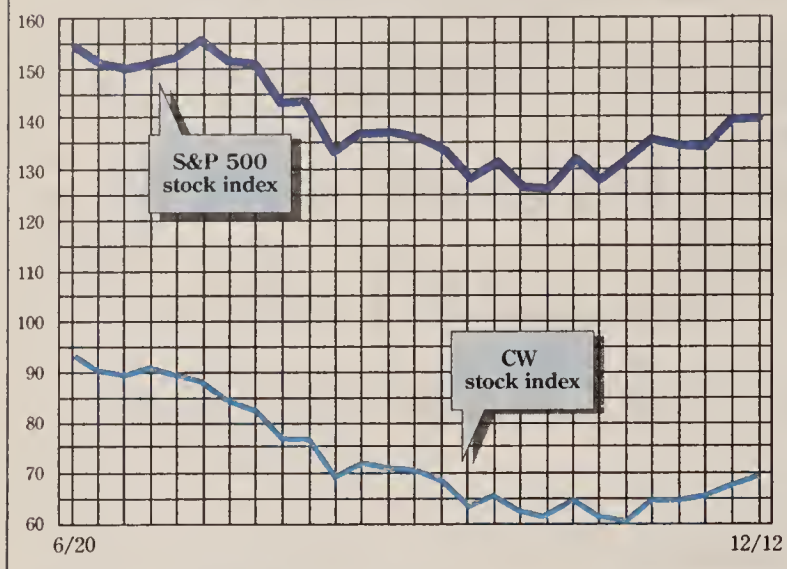

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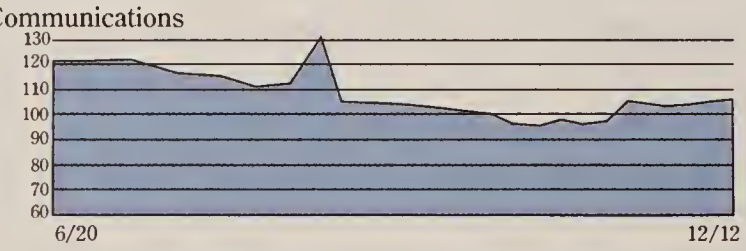
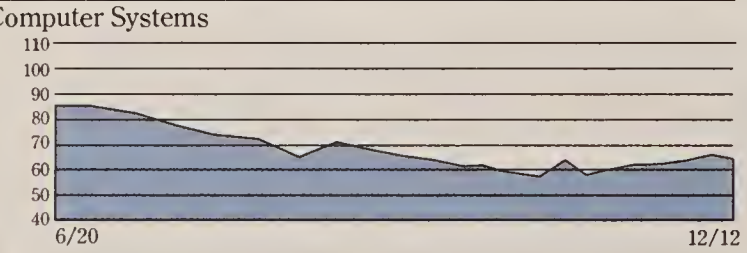
Communications	106.0	**107.4**
Computer Systems	67.4	**66.9**
Software & DP Services	99.9	**98.5**
Semiconductors	43.6	**42.6**
Peripherals & Subsystems	77.3	**75.4**
Leasing Companies	47.1	**54.2**
Composite Index	67.9	**69.0**
S&P 500 Index	139.4	**139.5**

Communications



Computer Systems



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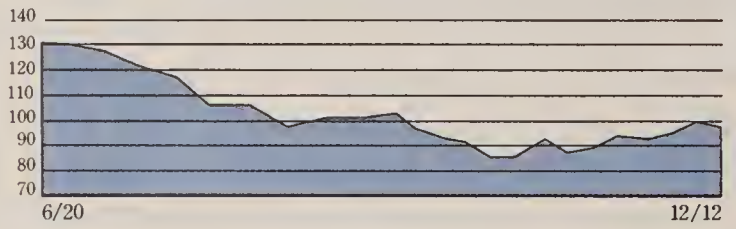

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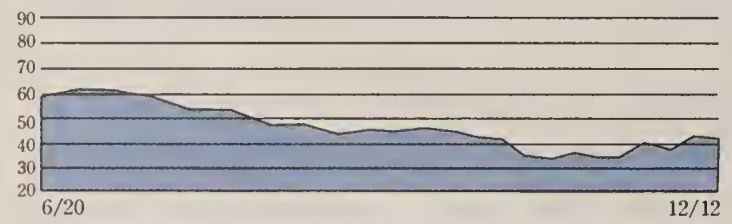

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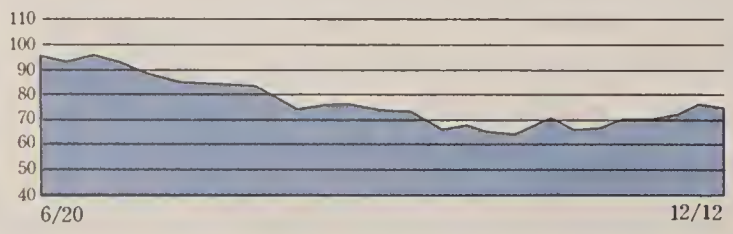

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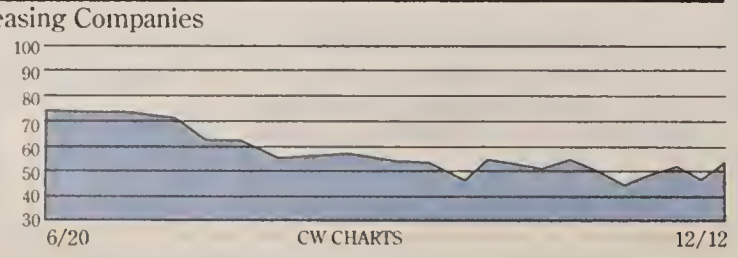

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CLOSING PRICES WEDNESDAY, DEC. 12, 1990

EXCH		52-WEEK RANGE		CLOSE DEC. 12, 1989	WEEK NET CHNGE	WEEK PCT CHNGE
	Communications and Network Services					
N	AMERICAN INFO TECHS CORP	70	53	68.875	1.4	2.0
Q	ANDREW CORP	26	16	21	1.3	6.3
Q	ARTEL COMM CORP	10	2	1.625	-0.1	-7.1
N	AT&T	47	30	30.375	0.3	0.8
Q	AVANTEK INC	4	2	2.25	-0.1	-5.3
N	AYOIN CORP	17	10	13.5	0.8	5.9
N	8ELL ATLANTIC CORP	57	40	55.75	0.5	0.9
N	8ELLSOUTH CORP	59	49	55	0.8	1.4
Q	COMPRESSION LA8S INC	16	7	10.375	-0.8	-6.7
Q	CONTEL CORP	36	23	35.125	0.6	1.8
Q	0ATA SWITCH CORP	4	2	4	0.9	28.0
Q	0IGITAL COMM ASSOC	27	9	12	-0.5	-4.0
Q	0YNATECH CORP	19	12	17	1.3	7.9
Q	FI8RONICS INTNL INC	13	5	8.25	0.3	3.1
Q	GANDALF TECHNOLOGIES	5	2	2.5	0.4	17.6
N	GENERAL DATACOMM INOS	5	2	2.25	-0.1	-5.3
N	GTE CORP	36	24	29.875	0.6	2.1
Q	INFOTRON SYS CORP	9	1	1	-0.1	-11.1
N	ITT CORP	61	40	48.5	0.6	1.3
N	M A COM INC	7	3	6.25	-0.4	-5.7
Q	MCI COMMUNICATIONS CORP	45	19	20.125	0.5	2.5
N	NETWORK EQUIP TECH INC	34	5	6	-0.1	-2.0
Q	NETWORK SYS CORP	15	8	11.125	0.1	1.1
N	NORTHERN TELECOM LTO	30	22	28.75	0.8	2.7
Q	NOVELL INC	34	14	31.5	-1.3	-3.8
N	NYNEX CORP	92	67	75	3.4	4.7
N	PACIFIC TELESIS GROUP	52	36	46.5	0.9	1.9
A	PENRIL CORP	9	5	6.875	-0.3	-3.5
N	SCIENTIFIC ATLANTA INC	29	9	13.125	0.9	7.1
N	SOUTHWESTERN 8ELL CORP	65	47	56.25	0.1	0.2
Q	3 COM CORP	19	5	8.625	-0.4	-4.2
N	U S WEST INC	41	32	38.625	1.3	3.3
	Computer Systems					
Q	ALLIANT COMPUTER SYS	9	1	0.875	0.0	0.0
Q	ALPHA MICROSYSTEMS	5	1	2.5	-0.1	-2.5
A	AMOAHL CORP	19	10	14.25	0.4	2.7
Q	APPLE COMPUTER INC	48	24	39.625	-0.5	-1.2
Q	AST RESH INC	30	10	27.75	-0.1	-0.4
N	8OLT 8ERANEK & NEWMAN	8	4	4.375	0.1	2.9
N	COMPAQ COMPUTER CORP	68	36	55.75	-0.3	-0.4
N	COMMODORE INTNL	12	5	11.5	1.0	9.5
Q	COMPUTER AUTOMATION INC	6	0	0.75	0.1	9.0
N	CONTROL DATA CORP	22	8	9	-0.4	-4.0
N	CRAY RESH INC	51	20	31.75	-0.3	-0.8
N	DATA GEN CORP	13	4	5.5	-0.4	-6.4
N	DATAPOINT CORP	4	1	1.625	0.1	8.3
Q	DELL COMPUTER CORP	15	5	15.125	1.8	13.1
N	DIGITAL EQUIP CORP	95	46	57	-1.0	-1.7
N	FLOATING POINT SYS INC	4	0	1.125	0.0	0.0
N	HARRIS CORP	36	14	20.125	-0.3	-1.2
N	HEWLETT PACKARO CO	50	25	33	-0.4	-1.1
N	HONEYWELL INC	112	71	93.875	0.4	0.4
N	I8M	123	93	114.375	-0.3	-0.2
Q	INFORMATION INTL INC	14	8	8.75	0.0	0.0
Q	IPL SYS INC	17	5	14.75	-1.0	-6.3
N	MAI 8ASIC FOUR INC	4	1	0.938	-0.1	-6.2
N	MATSUSHITA ELEC INDL LTO	166	116	126	5.0	4.1
Q	MENTOR GRAPHICS CORP	26	9	13.125	-0.3	-1.9
N	N8I INC	1	0	0.094	0.0	-7.8
N	NCR CORP	93	45	89.5	2.9	3.3
Q	PYRAMI0 TECHNOLOGY	36	11	11.75	-1.9	-13.8
Q	SEQUENT COMP SYS INC	34	13	17.25	0.5	3.0
Q	SUN MICROSYSTEM INC	37	15	22.125	-0.6	-2.7
N	TANOEM COMPUTERS INC	30	9	13.375	-0.3	-1.8
N	TANOY CORP	41	24	27.875	-1.9	-6.3
N	ULTIMATE CORP	9	1	1.625	-0.4	-18.8
N	UNISYS CORP	17	2	2.875	-0.1	-4.2
A	WANG LABS INC	6	3	2.875	0.0	0.0
	Software & DP Services					
Q	AMERICAN MGMT SYS INC	20	11	17.75	0.9	5.2
Q	AMERICAN SOFTWARE INC	18	8	12.875	0.1	1.0
N	ANACOMP INC	5	1	1.625	-0.1	-7.1
Q	ANALYSTS INTL CORP	24	10	14	-0.3	-1.8
Q	ASHTON TATE	15	5	8	-0.5	-5.9
Q	ASK COMPUTER SYS INC	10	4	5.375	-0.2	-3.4
N	AUTO DATA PROCESSING	60	45	53	-1.9	-3.4
Q	AUTOOESK INC	60	32	47.5	-2.9	-5.7
Q	8MC SOFTWARE INC	30	17	27.25	2.0	7.9
N	BUSINESSLAN0 INC	12	1	1.25	-0.3	-16.7
Q	COGNOS INC	10	4	7.75	0.3	3.3
N	COMPUTER ASSOC INTL INC	17	4	7.875	-0.1	-1.6
Q	COMPUTER HORIZONS CORP	17	8	14.75	-0.3	-1.7
N	COMPUTER SCIENCES CORP	59	37	47	-2.0	-4.1
N	COMPUTER TASK GROUP INC	12	7	9	1.4	18.0
Q	COMSHARE INC	25	14	18	-0.3	-1.4
Q	CORPORATE SOFTWARE	16	4	7.25	-0.3	-3.3
N	GENERAL MTRS (CLS E)	38	24	37.75	0.3	0.7
Q	GOAL SYSTEMS INTL	18	8	11.75	2.75	30.6
Q	HOGAN SYS INC	7	2	2.563	-0.1	-2.4
Q	INFORMIX CORP	18	4	4.75	-0.6	-11.6
Q	INTELLICORP INC	8	1	1.875	-0.1	-6.3
Q	LEGENT CORP	31	17	24.25	1.3	5.4
Q	LOTUS DEV CORP	39	13	18.75	-3.3	-14.8
Q	MICROSOFT CORP	81	38	72.5	-2.8	-3.7
Q	NATIONAL DATA CORP	35	8	12	-2.5	-17.2
N	ON LINE SOFTWARE INTL INC	11	4	4.625	0.1	2.8
Q	ORACLE SYS CORP	188	5	7.875	-0.3	-3.1
N	PANSOPHIC SYS INC	19	7	8.375	0.4	4.7
Q	PHOENIX TECHNOLOGIES INC	5	1	2.375	0.0	0.0
N	POLICY MGMT SYS CORP	43	30	39.5	0.5	1.3
Q	PROGRAMMING & SYS INC	13	5	6	0.0	0.0
N	REYNOLOS & REYNOLOS CO	26	12	15.375	-0.3	-1.6
Q	SAGE SOFTWARE INC	16	8	10.875	0.1	1.2
Q	SEI CORP	22	15	20.625	2.4	13.0
Q	SHARED MEO SYS CORP	18	12	16.875	-1.0	-5.6
Q	SOFTWARE PU8G CORP	28	12	19.75	-0.5	-2.5
N	STERLING SOFTWARE INC	11	6	8	0.3	3.2
Q	SUNGARD DATA SYS INC	26	10	14.25	0.3	1.8
N	SYSTEM CENTER INC	25	6	9	-1.3	-12.2
N	SYS. SOFT INC	29	13	24.75	-1.3	-4.8
Q	WOROSTAR	2	1	1.25	0.2	17.6
	Semiconductors					
N	AOV MICRO OEVICES INC	11	4	4.875	0.3	5.4
N	ANALOG OEVICES INC	10	6	6.75	0.4	5.9
Q	ANALOGIC CORP	10	8	8.5	-0.3	-2.9
Q	CHIPS & TECHNOLOGIES INC	24	5	8.5	-0.1	-1.4
Q	INTEL CORP	52	28	36.75	-1.5	-3.9
N	MICRON TECHNOLOGY INC	16	7	10.25	-1.4	-11.8
N	MOTOROLA INC	88	49	52.5	-2.5	-4.5
N	NATL SEMICONOUCTOR	9	3	4.25	-0.1	-2.9
N	TEXAS INSTRS INC	44	23	36	-0.3	-0.7
A	WESTERN OIGITAL CORP	15	4	4.875	-0.4	-7.1
	Peripherals					
Q	ALLOY COMP	2	0	0.156	0.1	66.0
N	AM INTL INC	5	1	1.25	-0.1	-9.1
Q	AUTO TROL TECH CORP	4	2	1.875	0.0	0.0
Q	8ANCTEC INC	24	10	11.25	-0.3	-2.2
A	COGNITRONICS CORP	7	3	6.125	-0.4	-5.8
N	CONNER PERIPHERALS	31	11	24.25	-5.0	-17.1
A	DATARAM CORP	22	7	9	-0.5	-5.3
N	EASTMAN KODAK CO	44	34	41.5	-0.4	-0.9
N	E M C CORP MASS	10	3	7.875	0.0	0.0
Q	EMULEX CORP	9	4	5.5	-0.3	-4.3
Q	EVANS & SUTHERLANO	35	14	18.75	-1.0	-5.1
Q	ICOT CORP	2	0	0.281	-0.1	-25.1
Q	INTERLEAF INC	8	3	3.875	-0.4	-8.8
Q	IOMEGA CORP	6	3	5.063	-0.1	-1.2
Q	MASSTOR SYS CORP	3	0	0.375	0.1	19.8
Q	MAXTOR CORP	17	4	4.625	-0.8	-14.0
Q	MICROPOLIS CORP	10	3	8	-0.3	-3.0
N	MINNESOTA MNG & MFG CO	91	74	86.125	2.5	3.0
Q	PERSONAL COMP PROOUCTS INC	5	4	3.625	0.1	1.7
Q	PRINTRONIX INC	15	6	8.75	0.1	1.4
N	QMS INC	21	9	13.875	-0.4	-2.6
Q	QUANTUM CORP	26	9	19.75	-2.9	-12.7
N	RECOGNITION EQUIP INC	8	4	5.125	0.3	-5.1
Q	REXON INC	10	4	6.375	0.5	8.5
Q	SEAGATE TECHNOLOGY	20	6	10.375	-0.4	-3.5
N	STORAGE TECH CORP	35	11	20.5	-2.0	-8.9
Q	TANOON CORP	4	1	1.813	-0.3	-14.7
N	TEKTRONIX INC	19	12	18.875	1.0	5.6
Q	TELEVIOEO SYS INC	1	0	0.25	0.0	14.2
N	XEROX CORP	59	29	37	0.3	0.7
	Leasing Companies					
N	CAPITAL ASSOC INTNL INC	5	0	0.688	0.3	57.1
N	COMOISCO INC	29	15	18.125	0.1	0.7
Q	LOI CORPORATION	17	9	12.25	1.4	12.6
Q	SELECTERM INC	7	3	2.75	0.0	0.0

EXCH: N=NEW YORK; A=AMERICAN; Q=NATIONAL

Bargain buys

Wall St. shoppers found deals in high-tech market

Investors shopped for sale items in the technology arena last week, taking advantage of recent price drops while the taking was still good. Among the apparent bargains was Stratus Computer, Inc., which traders thrust up 1⅜ points last week to 24½ by Thursday's close.

Evidently, Novell, Inc. was also a good buy after it reported fourth-quarter profits had doubled, compared with the same period in 1989. Novell shares gained a point last week to 32¾.

Adaptec, Inc. turned investors off, however, as it projected sagging earnings in the quarter to come. Adaptec dropped 5½ points for the week, closing Thursday at 9⅜. Other software issues were also without takers, including Microsoft Corp. and rival Lotus Development Corp. Lotus slipped 1¾ points to 19, while Microsoft fell 1½ points to 72¾.

The computer industry soap opera starring AT&T and NCR Corp. continued to capture audiences' attention on Wall Street. Watchers flip-flopped, however, sending NCR down and AT&T up last week, after the opposite had happened the week before last. AT&T regained 1⅛ of the 2 points it had lost the previous week, closing Thursday at 31. Similarly, although NCR shot up the week before last, it sank 1⅝ points last week to close at 90⅛.

Meanwhile, bellwethers IBM and Digital Equipment Corp. sent mixed signals. IBM inched up ⅜ of a notch to 112⅞. As news spread of DEC's money-saving scheme for the coming year — which includes executive shuffles and possible layoffs throughout the company — DEC stock faltered, losing ¾ of a point to close at 56⅞.

Elsewhere, semiconductor firms Advanced Micro Devices, Inc. and National Semiconductor Corp. each picked up ¼ of a point, closing at 4⅞ and 4⅜, respectively. Intel Corp., however, lost 1½ points, closing at 36¼.

KIM S. NASH

NEWS SHORTS

Sears pushing EDI with suppliers

Sears, Roebuck and Co.'s Merchandise Group, the nation's largest retailer, will begin mailing letters this week to its suppliers telling them when the company will expect them to be able to engage in ANSI standard electronic data interchange (EDI). Lance Dailey, director of EDI implementation at Sears' Merchandise Group, said suppliers will be expected to be up and running within 90 days of receiving the letter. Executives at several suppliers spoken with at a Sears-run EDI seminar were positive about the move, saying that it marked Sears' break with its proprietary network, Senden.

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DEC unveils 5¼-in. disk systems

Digital Equipment Corp. announced a new generation of 5¼-in. high-performance removable disk storage systems last week for its low- to midrange computers. The removable storage element subsystems come in two configurations — the 1G-byte RF72-RSE and the 381M-byte RF31-RSE — and are based on DEC's 5¼-in. Winchester disk drive with built-in controller. Prices range from $7,600 to $16,900, with availability 60 days after ordering.

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FAA stops, restarts project

A 10-year plan for outsourcing the Federal Aviation Administration's administrative computing was withdrawn late last month, but a new request for proposals will be out this week. The original plan was hotly criticized by the General Accounting Office, and the FAA's authority to proceed with it was temporarily suspended this summer. Mike Sherwin, director of management systems at the agency, said the plans were basically the same, but the details will be different.

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Amdahl pushes up UTS 2.1 delivery

Amdahl Corp. jumped its first-quarter 1991 schedule for delivering UTS Release 2.1, the latest version of its mainframe-based Unix operating system, by announcing immediate availability. UTS 2.1 complies with AT&T's Unix System V Release 3.1 and incorporates some features of Unix System V, Release 4 and Berkeley Unix BSD Release 4.3. Early UTS 2.1 user sites included US West Communications, Grumman Corp. data centers that support the National Aeronautics and Space Administration's Johnson Space Center and AT&T.

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Ask/Apple team yields Smart/Look

Ask Computer Systems, Inc.'s Ingres Division and Apple Computer, Inc. have developed Ingres Smart/Look, which allows character-based applications developed with Ingres Corp. tools to run on Macintoshes, complete with the traditional Macintosh look-and-feel. Smart/Look will initially run on a DEC VAX computer, but support for Unix host systems will follow, Ask said. Smart/ Look is priced at $395 for a package that runs on the VAX host; an additional license fee of $395 is required for each Macintosh that is supported.

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Netframe shows 250-user server

Netframe Systems, Inc. unveiled its Intel Corp. I486-based NF200 server, designed to handle local-area networks of as many as 250 users that have evolved beyond file sharing and communications applications to encompass SQL database processing. The base price for the NF200 is $26,950 with immediate availability.

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Diebold buys into IBM's tellers

The terms were not disclosed, but the deal is done: As of late last week, Diebold, Inc. is the owner of those assets of IBM's automated teller machine (ATM) service business necessary to let Diebold fully support all U.S.-based IBM ATMs. The Canton, Ohio-based self-service transaction automator said it expects the acquisition to swell its customer service revenue by approximately 10% when the new service goes into full swing.

Users mostly unfazed by Officevision delay

BY ROSEMARY HAMILTON
and PATRICIA KEEFE
CW STAFF

When IBM delivers its scheduled status report on Officevision this week, it is expected to announce the second major delay for its strategic office system platform. However, customers and analysts contacted last week shrugged off the bad news.

"Who expects it to ship on time anyway?," quipped David Cearely, an analyst with the Gartner Group, Inc.

But the low-key reaction is not all good news for IBM. While some users contacted said they are not worried about IBM's schedule because they are slowly ramping up with Officevision themselves, others noted they had already decided to put off plans to implement Officevision, which some say does not work.

Users have not given up, but they are frustrated, said John Dunkle, an analyst with Workgroup Technologies, Inc. He predicted that 1991 will be a critical year for Officevision. If IBM fails to deliver some key, working pieces of the oft-delayed environment, it runs the risks of losing accounts to alternative electronic services, such as Hewlett-Packard Co.'s New Wave or NCR Corp.'s Cooperation.

For the already skeptical, the second product delay reinforces the earlier decision. "It just confirms we made the right decision," to go with Wang Laboratories, Inc. equipment a long time ago, said David Moore, a senior vice president at Mellon Bank Corp.

"We looked at Officevision, and it just does not fit our business needs," said Enrique Crespo Jr., corporate manager of computing service at Torrington Co., a "90%" IBM shop. Crespo is specifically disappointed in Officevision's lackluster support for MS-DOS. "I don't think it's ready for the public."

An IBM spokesman confirmed last week that the company will release a status report on Officevision this week, but declined to provide details (see story below).

Some industry sources have said IBM will be late by as much as several months in delivering the critical second release for all four Officevision platforms.

"I think IBM's big mistake was not in trying to do it, but in making a public commitment for when it would be ready," said Amy Wohl, president of Wohl Associates.

Delaying tactics

IBM's expected announcement of a revised Officevision schedule this week will probably downplay delays by repositioning the critical second release of the platform.

For starters, the company is expected to focus on OS/2 Release 1.3 Extended Edition, particularly for its LAN platform. Therefore, Officevision/LAN Series Release 2 will be attached to the delivery of OS/2 Release 1.3 for LANs, which is not expected until March 1991.

This is a departure from the long-standing plan to release Officevision for OS/2 Release 1.2 although industry sources said they are not clear why this shift would cause any technical delays. Release 2 of Officevision for the LAN platform is particularly important because it will provide many more office functions and the ability to snap in third-party applications.

It is also considered by many industry analysts to be the heart of IBM's future office strategy, because it focuses on the desktop environment.

"Being able to do E-mail on MVS is not strategically important to IBM," said Stuart Woodring, an analyst at Cambridge, Mass.-based Forrester Research, Inc. "What is important is to address the needs of OA in an architecture that reflects the 1990s, and that's the LAN version."

Meanwhile, an IBM spokesman indicated that the company will also likely start pushing a more modular approach to Officevision Release 2, particularly for the host platforms.

But the big news about it was the OS/2-to-mainframe direct connect component. Plans are under way now to separate this OS/2 direct connect component and position it as a distinct feature, the IBM spokesman said. The company can then ship what is technically Release 2 software, although it will not have what had been a key piece.

In fact, IBM quietly began shipping what it calls Officevision/MVS Release 2 in September. Two users contacted last week, one of whom just installed Release 2, said it has no OS/2 direct connect support but appears to have a performance kick and comes with a feature called the Enterprise Address Book.

ROSEMARY HAMILTON

D&B Software to increase services

BY SALLY CUSACK
CW STAFF

NATICK, Mass. — Falling in step with the recent industry trend of placing customers atop visible pedestals, Dun and Bradstreet Software said last week that, beginning next year, its 10,000-plus clients will receive extended professional and maintenance services. They will also have opportunities to interact one-on-one with D&B Software executives.

In addition, D&B Software Chairman and Chief Executive Officer John P. Imlay Jr. recast his executive team, luring former McCormack & Dodge (M&D) Executive Vice President John Landry to the company that was formed last year from the merger of M&D and Management Science America, Inc.

Landry, as D&B Software's executive vice president, will be responsible for research and development initiatives.

D&B Software's *Landry will be in charge of research and development*

Imlay has also promoted D&B Software Executive Vice President Henry P. Holland to president and chief operating officer and recruited Michael Choukas, formerly a vice president at Boston-based financial firm Bain & Co., as executive vice president for strategy and business development.

Paul Zagaeski, a senior analyst at The Yankee Group, a research and consulting firm in Boston, noted that D&B Software's reorganization may be a prudent one, but he cautioned that the software business is a "different ball game these days."

"Vendors have to establish an outsourcing relationship with the end user — and they have to be willing to share some of the users' risks in purchasing, designing and implementing these products," Zagaeski said.

Further study of VDTs needed, EPA reports

BY J. A. SAVAGE
CW STAFF

There are enough indications of health risks from the type of electronic fields emanating from VDTs to justify significant new studies, the U.S. Environmental Protection Agency (EPA) concluded in a report that was released Friday.

The external review draft of the "Evaluation of the Potential Carcinogenicity of Electromagnetic Fields" concluded that there is an "elevated risk" of a link between cancer and electromagnetic fields created by the electricity in everything from VDTs to high-voltage wires. The draft also said there appears to be a link between various biological changes at the cell level and exposure to the fields, according to Martin Halper, director of the analysis and support division of the EPA's Office of Radiation.

The report also noted that while there are indications of a link, "the interaction between electromagnetic fields and cancer is not understood."

The EPA, which had been waiting for the conclusion of this report, has yet to set aside funds for new studies, according to Halper.

Because of the interest in electromagnetic fields from power lines, a group of utilities has offered to create a voluntary fund to pursue more studies.

The report is expected to create so much interest that the White House Science Adviser's office and White House Chief of Staff John Sununu have held it up from public release since Nov. 27.

One of the reasons given to the EPA by the White House was fear of alarming people, confirmed EPA project manager Robert McGaughy and an EPA spokeswoman. "It does affect everyone," he said.

"This is a very difficult area that, I am sure you agree, requires careful treatment if we are to serve the public well," wrote White House Science Advisor D. Allan Bromley in an August memorandum to the head of the EPA. Union organizers said the EPA report is the kind of ammunition they need to get greater health protections for VDT workers.

However, a lack of solid information has unions backing off from some electromagnetic-related demands, such as work transfer during pregnancy.

"We just haven't had the ammunition," said Barbara Kellogg, an organizer at the Service Employees International Union in San Francisco. She said anecdotal reports of problems in the workplace, such as clusters of birth defects or stillbirths, reach her office, "but there is no documentation."

Not convinced

Despite EPA findings and pressure from unions, many companies that employ large numbers of VDT workers remain largely unconvinced of potential health effects on their workers based on scientific information available.

"None of the studies to date prove anything," said Terry Thompson, senior attorney at AT&T in Basking Ridge, N.J. "We think there is no foundation for fear."

"We have experts looking at this, but scientific data are inconclusive," a Pacific Bell spokesman said.

Previous studies have been largely inconclusive, because studying electromagnetic effects is nothing like looking for the effects of a chemical, according to Halper.

"It looks like it's breaking every rule established for dealing with chemicals," he said. "Forget linear threshold models and lifetime average daily doses; then we can begin talking about electromagnetic fields."

There will be a 90-day period during which the EPA will accept comments from the public regarding the report. Then it goes to a second review committee made up of scientists from 18 federal agencies.

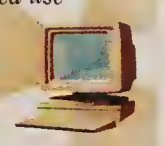
The EPA report deals with extra low frequency (ELF) fields, which emanate from VDTs as well as power lines and appliances. ELFs range from 3Hz to 3,000Hz.

VDTs also give off another level of electromagnetic field, called very low frequency. That field is not covered in the report, according to McGaughy. The report is, however, being studied by the National Institute for Occupational Safety and Health for potential reproductive effects.

CW Chicago bureau chief Ellis Booker contributed to this story.

Burning rays?

Questions about the health effects of VDTs remain unanswered despite their increased use



U.S. installed base of VDT screens

	1989	1990
Terminals	13.7M	13.5M
PCs	50.7M	55.7M
Total	64.4M	69.2M

Source: International Data Corp.
CW Chart: Paul Mock

VDT regulations adopted

BY J. A. SAVAGE
CW STAFF

SAN FRANCISCO — San Francisco's Board of Supervisors voted eight to one last week to adopt legislation governing adjustable workstations and chairs, among other requirements, for employers who have more than 15 workers who use VDTs.

The hotly contested legislation was passed with major compromises to employers in an effort to keep them from leaving the city, according to supervisor Nancy Walker. "We don't want to have moving vans pull up," she said.

The legislation will be heard for a second reading this week and must be signed by Mayor Art Agnos, who has given no indication whether he will accept or veto it.

Employers would have two years from the date the legislation passes to conform to its requirements, and an advisory board will be able to suggest revisions to the legislation.

The city's budget analyst, Harvey Rose, said the current version of the legislation will cost the city and businesses $37.6 million less than the original estimate of $70 million to $120 million.

A space saver?

The savings are mostly from cutting out the provision that VDTs be placed no closer than five feet from each worker, which would have caused employers to acquire more office space for employees.

The Chamber of Commerce continues to oppose the legislation, despite being included in compromises between labor unions and the city. "We will encourage the mayor to veto it," a Chamber spokeswoman said. She added that major corporations in San Francisco, such as Wells Fargo Bank NA, United Airlines and RH Macy & Co., are reviewing legal action on the issue with their law departments.

User group joins COS

BY GARY H. ANTHES
CW STAFF

MCLEAN, Va. — The User Alliance for Open Systems, originally known as the Houston 30, announced last week that it has become part of the Corporation for Open Systems (COS) based here. The alliance joins a growing number of user-oriented units within COS whose mission is to poll their constituencies and write requirements for the vendor community.

E. W. "Bud" Huber, chairman of the alliance, said the group has received inquiries about membership from 835 user and vendor companies — about 90% of which are in the U.S. "At the end of 1991, I'll be happy to have 100 active people working in the alliance," he said.

Corporate members with sales above $15 million will pay $25,000 in yearly dues, while smaller firms will be assessed $9,500. "Allies" — essentially, recipients of COS and User Alliance information — will pay $2,000 yearly, and unaffiliated individuals will pay $150. The dues structure is an apparent response to earlier concerns that the $25,000 COS dues would bar smaller companies from participating in the User Alliance.

According to Huber, eight major organizations have joined the COS User Alliance.

Holding back

However, others who had attended the user coalition's meetings this year are holding back. One of these, General Electric Co., said it has no plan to join because it found that COS was too vendor-oriented when GE was a member. "The people at GE didn't feel COS had a user orientation and didn't think COS served GE's interest very well," said Duane Elms, program manager of technical computing at GE. However, Elms said he will join as an individual. "In spirit and in effort, we'll support what goes on."

Huber said the alliance will implement a list of "action items" for bringing down the barriers to open systems.

Judge

FROM PAGE 1

merits of the case," he said.

Lyons claimed there was no deliberate intention to mislead the copyright office. "The attorney who filed the original application in the early 1980s has testified in depositions that he did not mention JPLDIS in the application simply because he had never heard of it," Lyons said. Lyons also added that the copyright office would still have issued the copyright even if the JPLDIS was mentioned.

Some observers said Hatter's decision has the potential to affect other cases involving artistic inspiration. Apple Computer, Inc. is in a long copyright battle with Microsoft Corp. and Hewlett-Packard Co. in which it has charged the pair with copying its Macintosh screen appearance. The defendants, however, have countercharged that Apple based the look of the Macintosh on work done by Xerox Corp. at its Palo Alto, Calif., Research Center in the 1970s.

Officials from Torrance, Calif.-based Ashton-Tate said the original suit filed in November 1988 alleged that Fox's Foxbase product unlawfully copied Dbase's concept, "look and feel," programming language, sequence of events and arrangement of the program as presented to the end user. The legal action sought an injunction against sales and unspecified damages.

No clear precedent

While there is established legal precedent protecting a program's screen appearance, there has never been such a precedent for claiming proprietary rights to a programming language or a program's sequence of events. Opponents argued that such a ruling could threaten the open base of all programming.

"This certainly removes a cloud from the database world," said Dave Fulton, president of Perrysburg, Ohio-based Fox. "Now we'll be able to standardize the whole environment and mature like computer applications vendors ought to mature."

There are currently 10 vendors marketing Dbase language compilers and interpreters. Four of these — Ashton-Tate, Fox, Wordtech Systems, Inc. and Nantucket Corp. — hold more than 90% of the Dbase-compatible market.

Wordtech President David Miller added, "It ensures that Dbase is not a 'single-source' solution for purchasers, but rather a multisource solution with many suppliers."

However, Ashton-Tate's user base proved its loyalty during the 18-month period when the most recent release of Dbase was pulled from the market to fix a string of bugs.

"The reason I have stuck by Dbase is because of everything that can tie into it," said Rock Blanco, IS vice president at Garber Travel in Boston. "Price is one of the least things I consider."

Some analysts downplayed the news because they said the most important issues remained unresolved. "The judge never really addressed the basic question of whether you can or cannot copyright a language, so we may not have had that much of a precedent here," said David Mayer, an analyst at Montgomery Securities in San Francisco.

CW staff writer Carol Hildebrand contributed to this story.

DG founder resigns; possible ouster seen

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — Another era ended last week as Data General Corp. founder and Chairman Edson D. de Castro announced that he will leave the company Dec. 31. He will not stand for re-election to the board.

"Obviously, there is a certain element of disappointment," de Castro said, referring to his departure amid speculation that his decision was somewhat forced by the board of directors. "Frankly, though, I'm anxious to get back to work. I'm not the type of person that can sit around and do nothing."

DG founder *de Castro's resignation marks the end of an era at the firm*

De Castro, engineer and entrepreneur, left Digital Equipment Corp. in 1968 to found DG, where he served as president until he was named chairman of the board and chief scientist in 1989, a position insiders said gave him figurehead status and little hands-on involvement in the company.

Ronald L. Skates, who was named president and chief executive officer in 1989, will continue to lead DG in that capacity, the company said.

According to Carolyn Griffin, a senior analyst at International Data Corp., a Framingham, Mass.-based market research firm, the transfer of power from de Castro to Skates has been in the works for a long time.

One longtime DG customer at a manufacturing facility added, "I don't think he has been actively involved in the day-to-day business for quite some time, so I really don't think it will affect us as customers at all. The only positive thing I see is that perhaps Wall Street investors will see this as a definite sign that things are going to change."

De Castro indicated he will be aggressively searching for new ventures and will consider several possibilities in the near future.

DG also announced that Vice Chairman Herbert J. Richman, the man who created DG's hard-hitting sales force, will not be standing for re-election.

Referring to de Castro as an "industry legend," Skates credited both the former chairman and Richman for making DG a leader in the industry and added that de Castro's leadership, technologically superior products and "dedication to excellence has earned Data General a reputation for quality and reliability."

Reflecting back on missed opportunities, de Castro said his greatest mistake was not getting into the personal computer business during its infancy, adding that it is a generic industry dilemma to become "so focused on the success of the day, you fail to look at options for the future."

Can Aviion save crippled DG?

Analysts say $100 million in workstation sales won't carry company

BY SALLY CUSACK
CW STAFF

WESTBORO, Mass. — With each disastrous financial report, Data General Corp. struts out an executive to say that sales of its Aviion workstation are "gaining momentum," and to confirm that the company is banking on its reduced instruction set computing (RISC) Unix-based machine to pull it out of the red ink.

The question is, in today's bleak financial climate, will Aviion sales move fast enough to save the limping corporation?

While DG boasts $100 million worth of Aviion sales for 1990, analysts agreed that the numbers are not substantial enough to carry the $1.3 billion entity. Industry experts estimated that there are several thousand Aviions currently installed in the U.S. and abroad, but that still gives the company a small market share in an extremely competitive RISC market — probably less than 1%.

The latest twist is that DG is no longer stridently positioning the Aviion as a workstation.

"We cannot compete on a head-to-head basis with Sun, HP and DEC in the workstation marketplace," said William Zastrow, DG's new vice president of Open Systems Marketing.

Citing Sun Microsystems, Inc., Hewlett-Packard Co. and Digital Equipment Corp.'s significant presence in workstation installations, Zastrow said DG will dominate targeted vertical markets, with the Aviion functioning in a server capacity.

"We're going to be a leader in the medium- and large-scale multiuser server market," Zastrow said, adding that workstation sales would naturally follow because of the architecture's binary compatibility.

Aviion customers, although small in number, reported they are happy with the product.

"The Aviion is truly excellent in terms of reliability," said Tom LaMarche, data systems manager at the Maricopa County Flood Control District in Phoenix. Last year, it installed seven Aviion workstations and an Aviion 5200 Server to run its Geographic Information Services (GIS) applications.

"Of course," LaMarche added, "like other people, we worry about DG's financial condition, especially through the recession."

Can't get enough

According to David Lundquist, vice president at Mercy Health Care Center in Oklahoma City, Aviion installations at the facility have gone "extremely well. Right now, we're behind schedule as far as people who want to sign onto the system."

The future of DG and Aviion seems to rest on how fast and how many value added-resellers and software applications will be available on the Unix-based platform, coupled with whatever value-added services the company can provide.

"The Aviion has to be the mechanism for survival," said George Weiss, an analyst at Gartner Group, Inc., a Stamford, Conn.-based market research and consulting firm.

"With the economy slowing down, even the big guys like Digital Equipment Corp. have been having trouble," said Lisa Thorell, an analyst at Dataquest, Inc., a market research company based in San Jose, Calif.

Noting that the company has recently scored some major wins, including a $45 million contract with U.S. Sprint Communications Co. for Aviion 100s, and has won its appeal on the much-publicized contract bid for government GIS-related installations, Thorell cautioned that DG "can't afford to make any mistakes at this point. They're coming up from behind."

According to DG, more than 400 software developers have agreed to port their applications to the Aviion line, which will eventually give Aviion users more than 1,000 applications to choose from. There are also approximately 550 value-added resellers currently partnered with DG, and a recent agreement with Softswitch, Inc. in Wayne, Pa., to build a switching product on the Aviion is an example of the vertical approach DG is taking to market its product.

Michael D. Zisman, president of Softswitch, said his company started looking for a Unix server last year and chose the Aviion because of its strong communication stacks capabilities. Zisman does not perceive DG's ailing financials as a threat to the product: "We didn't commit to a proprietary platform, but a Unix platform. If the Aviion disappeared tomorrow, 95% of the software architecture can be ported to another system."

DEC weeds out employee base, offers severance pay

BY MARYFRAN JOHNSON
CW STAFF

MAYNARD, Mass. — Digital Equipment Corp. announced last week a key executive shuffle intended to both simplify the corporate maze and provide better field service for its customers.

The company also inched a step closer to the possibility of employee layoffs in early 1991. A $1 billion cost-cutting effort now under way is forcing close scrutiny of every expenditure.

DEC's voluntary severance program has 7,000 employees considering whether to quit or move to other jobs within the company, according to spokeswoman Nikki Richardson. At the end of this month, managers will evaluate the results of the program, which has cut the worldwide staff of 125,900 by 3,200 in 1990.

"Layoffs are not out of the question, but there has been no decision to have a layoff," Richardson stressed.

In the executive shifts, Russell Gullotti moved into the vice presidency of the newly created Corporate Services, which pulls DEC's worldwide systems integration and support services under one senior manager. Donald Zereski, formerly vice president of customer services, is now vice president of all U.S. sales and services, including product delivery and management activities.

David Grainger, formerly head of the sales organization, was appointed vice president of another new creation: an OEM/VAR Business Group with global responsibility to expand DEC's indirect sales channels. All three executives report to Jack Smith, senior vice president of operations and right-hand man to DEC President Kenneth H. Olsen.

"You could call this one more flailing attempt to get DEC moving again," said Robert Herwick, an analyst at Hambrecht & Quist, Inc. in San Francisco. "Hopefully, this means there will be less redundancy, less coming back to customers to do what they should have done in the first place."

If the executive changes bring about the promised improvements in the field, DEC users would have much cause for rejoicing, several analysts said.

Customers often bemoan the quality of their sales representatives, noted Michael Artukovich, systems support supervisor at Health and Tennis Corporation of America in Los Angeles.

Artukovich said the majority of users he spoke with have "major complaints about their sales reps."

"If DEC will survive, they will have to revamp their sales organization," he said. "I've dealt with smaller, third-party subsystem manufacturers, and DEC should take lessons from companies like that, who stay in tune with their user base, understand what the user needs and respond to it."

Senior writer Alan Ryan contributed to this article.

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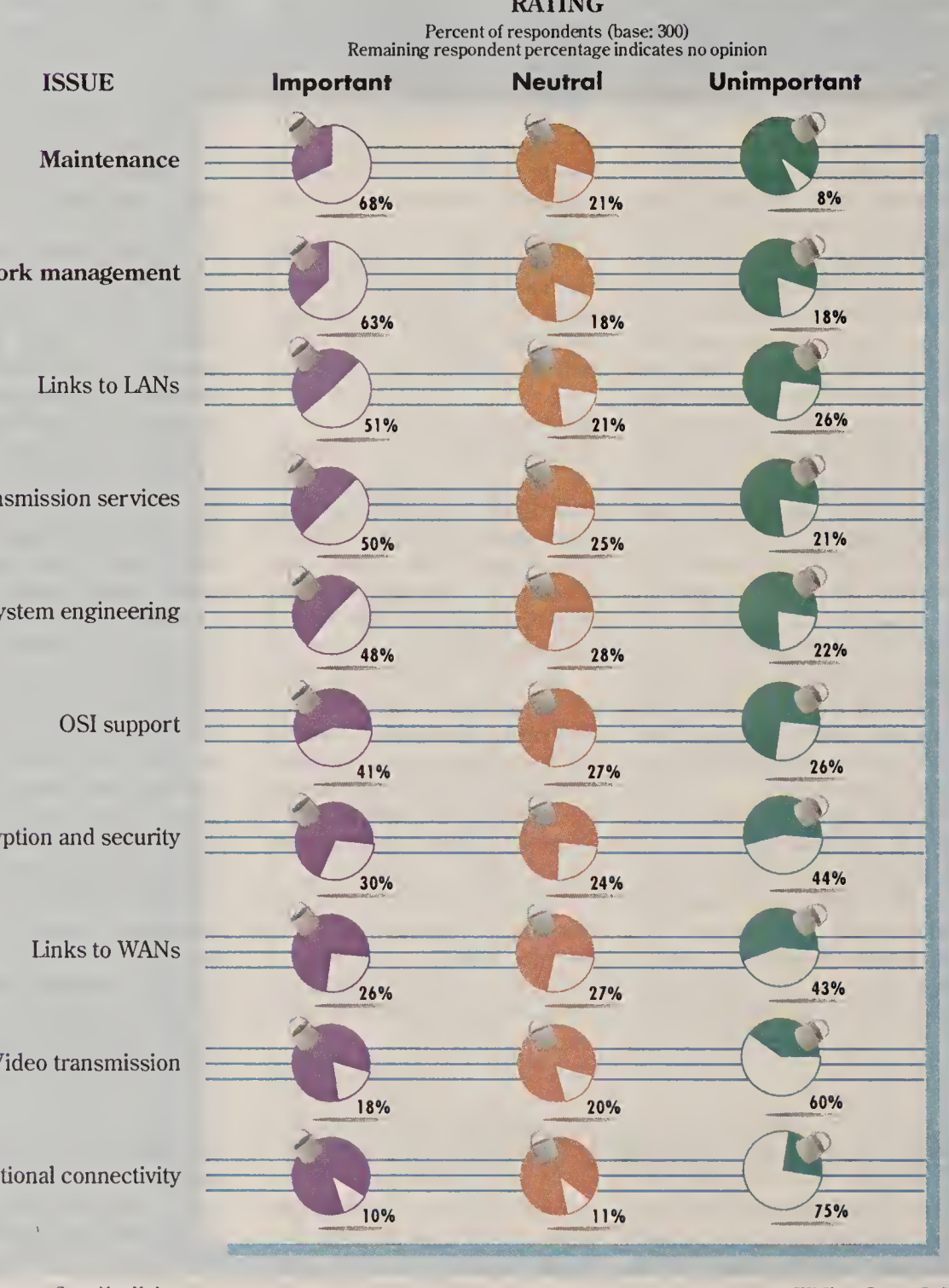
TRENDS

NETWORKING Wish List

Maintenance and network management get high marks when users list which networking issues are most important



Source: Link Resources Corp., New York

CW Chart: Doreen St. John

NEXT WEEK

Electronic data interchange has the potential to transform the way television stations sell advertising, and **Joe Harris**, director of information technology at NBC-TV Stations, is one executive leading the charge. However, there is plenty of resistance and defense of the old ways of doing business in the TV industry. See Manager's Journal.

Reinhold Spiegler

Forecast 1991, a special year-end double issue, looks at the key issues facing information systems management in the coming year. You'll get practical tips for stretching your IS dollar and read about the hottest technologies and companies to watch in 1991. Plus, 1990 all-star team, job outlook and our 4th annual dubious achievement awards.

INSIDE LINES

This one got away

Dun & Bradstreet Software has apparently lost its bid for Wright Systems, a privately held Michigan-based software house. The company was acquired outright by Integral in Walnut Creek, Calif., in a deal that was formalized on Dec. 7. Lou Wright, president of Wright Systems, will serve on Integral's board as well as take on the title of chairman of the firm's Integral Midrange company. David Snyder, executive vice president at Wright Systems, will also be joining the corporate executive staff at Integral.

Get Blue, get open

IBM is actually threatening to leapfrog DEC on the Open Systems Interconnect (OSI) support track by coming up with common programming interfaces that will allow users to port messaging and file-transfer applications across both Systems Network Architecture and OSI, a user tells us. IBM already offers a common programming interface for porting transaction processing applications across LU6.2 and OSI, but this would broaden its ability — which DEC reportedly lacks — to shelter application developers from the differences between OSI and its own proprietary upper-layer protocols, the user says. IBM is apparently preparing several major OSI announcements.

When it rains . . .

Are more layoffs in the offing at Wang? Rumors have been heating up the airwaves and the Lowell, Mass., local newspaper. When Wang President Rick Miller was in San Francisco last month, he responded to a question about layoffs by saying there were no such plans on his desk. However, a source said Wang is looking especially carefully at a number of areas, including customer engineering and research and development. "A customer engineer told me they are tracking [them] real close, checking to see how many calls they make, how much time they spend on accounts," a source said. Separately, there are reports that research and development, particularly in platform engineering, may be cut 30% to 35%.

The Ballad of OS/2, part 157

Far from the unwavering facade presented to users, a wavering Microsoft moves forward with LAN Manager Version 3.0. A consultant who has preliminary paperwork on the next edition says every reference to OS/2 on the original document was scratched out. Meanwhile, Microsoft is also busy on the language front, where it is said to have inked an OEM deal with DEC, under which DEC will private-label Microsoft compilers. On the operating system front, while users await DOS Version 5.0, reports are already circulating about DOS Version 6.0, which includes built-in Windows.

Was Mr. Olsen seen leaving the building?

Where there's smoke . . . IBM's Business Recovery Services Division had a nasty surprise Tuesday, when a connection between two electric company power grids shorted out just outside the disaster-recovery service's headquarters in Tampa, Fla. Ironically, the dual-power grid "feed" to the disaster-recovery center is intended to ensure continuous operations. IBM's computers kept on humming, running on battery power, but electricity wasn't restored for more than one hour. Dozens of people were evacuated from the site — including those running backup and recovery tests in the computer room.

The stockings were hung . . .

Still looking for an industry-related stocking stuffer? Borland Chief Executive Officer Philippe Kahn and a handful of friends and coworkers have released a compact disc entitled "Pacific High." The 73-minute CD features 23 numbers, ranging from New Age mood pieces to "Turbo Disturbo," a rap song offering nods to Borland's Turbo C++ programming language. The package is slicker than motor oil — but don't quit your day job, fellas.

We'll be rapping about holiday cheer for the next week or so, but we're never too festive to take your tips and opinions. Call them in to News Editor Peter Bartolik at (800) 343-6474, message COMPUTERWORLD *on MCI Mail or fax us at (508) 875-8931.*

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Std. plotter emulation	✓ Yes	No
Font card slots	✓ 2	1
Std. input paper tray capacity	✓ 200	50
Std. output paper tray capacity	✓ 100	50
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